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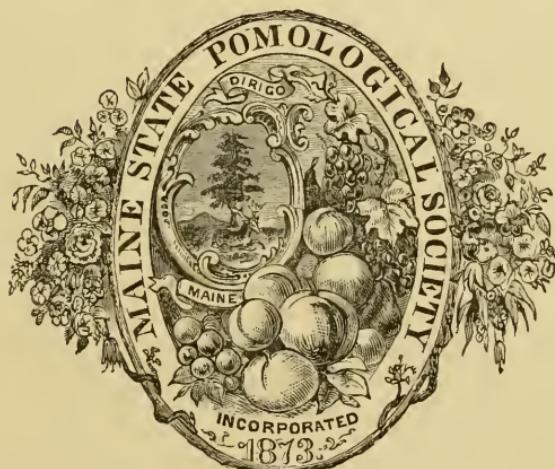
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TRANSACTIONS
OF THE
Maine State Pomological Society,
FOR THE YEAR 1886.

Including the Proceedings of the Winter Meeting held at Music Hall,
Farmington, February 3 and 4, 1887.



EDITED BY THE SECRETARY,
SAMUEL L. BOARDMAN.

AUGUSTA:
SPRAGUE, BURLEIGH & FLYNT, PRINTERS TO THE STATE.
1887.

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"Flowers seem intended for the solace of ordinary humanity: children love them; quiet, tender, contented, ordinary people love them as they grow; luxurious and disorderly people rejoice in them gathered. They are the cottager's treasure; and in the crowded town, mark, as with a little broken fragment of rainbow, the windows of the workers in whose heart rests the covenant of peace."

—JOHN RUSKIN, 1819.

"Think once more, my friends, of the great blessings which you may confer on mankind by the multiplication of good fruits. Next to saving the soul is the saving of health, and I know of no better means than an abundant supply of ripe fruits. Fruits are the overflow of nature's bounty; gems from the skies which are dropped down to beautify the earth, charm the sight, gratify the taste, and minister to the enjoyment of life; and the more we realize this, the more shall we appreciate the Divine goodness to us, and the duty of providing them for others."

—MARSHALL PINCKNEY WILDER,

1798-1886.



INTRODUCTION.

In presenting to the members and correspondents of the Maine State Pomological Society the fourteenth annual report of its transactions, I take great pleasure in congratulating them upon the continued prosperity and increasing usefulness of the Society as evinced by the character, variety and practical usefulness of the matter contained in this volume. With only limited means at its command, the Society is carrying forward a good work in promoting one of the largest and most important of our agricultural interests, and disseminating correct and trustworthy information regarding varieties of fruits best adapted for our State, with the most approved methods of culture, handling and marketing. This is a work which needs "line upon line" in its presentation to the public, although in the present volume there is believed to be little repetition, but on the contrary much of new, original and valuable information.

The exhibition at Lewiston last fall was one of the largest and most attractive the Society has ever held, the fruit shown representing a large crop, the third one in succession which the orchardists of our State have harvested. Each year the unprofitable varieties are more and more dropping from cultivation and from the exhibition tables, as our fruit growers come to realize the importance of growing only the more valuable late keeping, shipping varieties for which Maine is becoming so justly celebrated. The apples to grow are the apples which keep the longest and sell the best. Concerning the report of the Winter Meeting, it is proper to say that the Society is not to be held responsible for the correctness of statements, either of fact or opinion, in the papers and discussions presented, but undertakes simply to report them, or the substance of them, correctly. The writer of each essay is alone responsible for the same.

Through the work of the Society, as expressed in the report of the Committee given on page 89, as well as from the action of the State Grange and the influence of the public press, our Legislature

at its last session established Arbor Day, which was first observed on Tuesday, May 10, 1887, in accordance with a proclamation issued by His Excellency, Hon. J. R. Bodwell, Governor. It was quite generally observed throughout the State, and as the years go on, and its objects become better understood by our people, I believe it will conduce in a large measure to the beautifying and adornment of our home surroundings, school grounds, streets, highways, cemeteries and public parks. The more the home and the town are embellished the more they will be loved, and the closer our associations with them the stronger our attachment to home and native land.

Our Society is in correspondence with thirty-three national and State horticultural and pomological associations, which issue annual reports of transactions and proceedings. In some cases these reports are contained in small pamphlets of twenty pages, in others they extend to large volumes of six hundred pages. Generally they contain matter of great importance to fruit growers, much of which is as applicable to our own State as to those where the volumes are originally issued. To render this information of service to our fruit growers, I have included in subsequent pages a few selections from these reports because they are not accessible to members of our Society excepting in this way, while the extracts made I believe to be of great value. Especially would I call attention to the articles on the apple scab,—to which President Pope alluded in his annual address—and the results of arsenical spraying for the codling moth.

For the portrait of our much-loved and lately-deceased President, the Hon. Robert Hallowell Gardiner, which forms the frontispiece to this volume, we are under obligation to a member of the family who has generously presented the same to the Society. For the use of the plate of portrait of Hon. Marshall Pinckney Wilder, late President of the American Pomological Society, the Society is indebted to the kindness of James Vick, Rochester, N. Y. The plate of the Boardman apple was loaned by Hon. Henry E. Van Deman, chief of the Division of Pomology, Department of Agriculture, Washington, D. C., and is from the Report of the Department for 1886.

I wish here to express to the officers and members of the Society, as well as to the various persons with whom I have been in correspondence or association in the preparation of this volume for the press, my high appreciation of their uniform courtesy and kind consideration.

SAMUEL L. BOARDMAN.

AUGUSTA, August 28, 1887.

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OFFICERS FOR 1887.

President.

CHARLES S. POPE, Manchester.

Vice Presidents.

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O. C. NELSON, New Gloucester.

Secretary.

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Cumberland	" S. R. Sweetser, Cumberland Centre.
Franklin	" M. C. Hobbs, West Farmington.
Hancock	" Charles G. Atkins, Bucksport.
Kennebec	" E. A. Andrews, Gardiner.
Knox	" Elmas Hoffses, Warren.
Lincoln	" H. J. A. Simmons, Waldoboro'.
Oxford	" Jairus K. Hammond, Paris.
Penobscot	" J. E. Bennoch, Orono.
Piscataquis	" H. A. Robinson, Foxcroft.
Sagadahoc	" H. S. Cary, Topsham.
Somerset	" James S. Hoxie, North Fairfield.
Waldo	" D. B. Johnson, Freedom.
Washington	" Nelson S. Allen, Dennysville.
York	" Luther S. Moore, Limerick.

Committee on Nomenclature.

Samuel Rolfe, Portland; W. P. Atherton, Hallowell; D. P. True, Leeds Centre.

D. H. KNOWLTON, *Treasurer*,

IN ACCOUNT WITH MAINE STATE POMOLOGICAL SOCIETY.

DR.

CR.

To cash in treasury Dec 31, 1885....	\$12 78	By paid orders of Executive Com...	\$237 25
“ loan First Nat'l B'k of Wiscasset,	400 00	“ Secretary's salary.....	125 00
“ “ People's Trust Co., Farm-		“ note, First Nat'l B'k, Wiscasset,	400 00
ington.....	300 00	“ interest on loans	26 35
“ “ State Treasurer, bounty for		“ premiums paid, bal. 1885	242 50
1885.....	500 00	“ “ “ in full, 1886.....	613 25
“ life members' fees.....	60 00	“ cash in treasury Dec. 31, 1886....	81 51
“ annual members' fees.....	54 00		
“ State Agricultural Society	380 00		
“ interest on Permanent Fund	15 64		
“ “ “ deposit	3 44		
	\$1725 86		\$1725 86

FINANCIAL CONDITION OF THE SOCIETY JAN. 1ST, 1887.

Assets.		Liabilities.	
Amount due from State Treasurer,		Amount due on loan at Wiscasset	
bounty for 1886	\$500 00	National Bank.....	\$200 00
Cash in treasury	81 51	Amount due on loan, People's Trust	
Property owned by the Society,		Company, Farmington.....	300 00
estimated	150 00	Amount due on bills and accounts	
Amount on deposit in Wiscasset Sav-		not rendered, estimated	100 00
ings Bank to credit of Permanent			
Fund.....	344 40		
Balance due from State Agricultural			
Society	45 00		
	\$1120 91		600 00

PERMANENT FUND.

DR.		CR.	
To amount on deposit to credit of		By fees of 88 members.....	
Fund.....	\$344 40		\$880 00
Balance due Fund	535 60		
	\$880 00		\$880 00

D. H. KNOWLTON, *Treasurer*.

FARMINGTON, Feb. 2, 1887.

MAINE STATE POMOLOGICAL SOCIETY,
In Annual Meeting, Farmington, Feb. 3, 1887. }

The following members were appointed a committee to examine the Treasurer's account, viz.: D. J. Briggs, L. H. Blossom, W. P. Atherton. The committee reported that they had attended to their duty, having examined the account, which was found correct and properly cast, with vouchers for all amounts paid out. The committee was discharged.

A true copy from the records.

Attest:

SAMUEL L. BOARDMAN, *Sec'y.*

REPORT OF THE ANNUAL EXHIBITION.

MAINE STATE POMOLOGICAL SOCIETY.

Annual Exhibition of 1886.

The fourteenth annual exhibition of the Maine State Pomological Society was held at Lewiston, September 14 to 17, 1886, in connection with the annual exhibition of the Maine State Agricultural Society. The exhibit of the Society was placed upon the third floor of the large exhibition hall on State Fair Park, three wings of which were entirely given up to the Society's use, thus making one-third more floor and table space occupied by the exhibits than was the case at the fair of 1885. The exhibits were also more attractively arranged than at any previous fair, the location of the tables in the South Wing of the large hall having been changed, in order to give some variety to the displays, and the collections of cut flowers heretofore shown in the end of the North Wing were moved to the centre of the hall. The light was not quite as good here as it was in the old position, but what was lost in this respect was gained in variety of arrangement and the pleasing effect of a change in the appearance of the hall. A floral arch opening from the East Wing to the centre of the hall was another pleasing change in arrangement from previous years, and was admirably fitted up under direction of President Pope and with the assistance of Mr. Geo. M. Roak of Auburn.

The various collective exhibits of the Society, as for instance, the State, county and single variety exhibits, were each arranged by themselves, and all were most attractively displayed. For the best general exhibition of apples there were thirteen entries. In the class of county collections, the following-named counties did not exhibit, viz: Aroostook, Hancock, Piscataquis, Washington and York. In the class of best five autumn apples there were thirteen

entries ; in that of winter apples, eighteen ; in that for best collection for home use, thirteen. In the second division of apples, single plates of separate varieties, there were three hundred and eighty-seven entries.

For the best general collection of pears there were seven entries ; and for other entries in class II, a total of one hundred and thirty-five entries. There were but few entries of grapes. In class IV, plums, there were forty-six entries. In the miscellaneous class, which embraced canned and preserved fruits, there was a total of one hundred and eighteen entries. The department of flowers, class VI, was large and more attractive than for some years past, a fine display of pot plants having been made by G. M. Roak of Auburn. The entries in this class numbered sixty-one.

The general rules of the exhibition, together with the several premiums awarded in the various classes, are herewith given. Names of fruit and other articles for which no competition appeared are not given ; and the numbering of the various prizes, as published in the list of premiums, has been omitted.

GENERAL RULES OF THE EXHIBITION.

1. The general regulations of the joint exhibition will govern this department, as far as applicable thereto, and except as herein otherwise provided.

2. Entries may be made at the office of the Secretary, in Augusta, personally or by letter, until September 11th, and after that at the Exhibition Building at the Park, up to and including the first day of the exhibition, Tuesday, September 14th.

3. Exhibitors are requested to present full and accurate lists of the varieties of fruit or other articles to be entered; and to specify the premium for which each article is entered; also to affix their names and post-office addresses, so that the same may be correctly transferred to the books and exhibition cards.

Persons intending to make entries will confer a special favor by sending lists of the same to the Secretary at an early day.

4. All fruits and flowers offered for premiums must have been grown by the exhibitor, and any violation of this rule will debar or forfeit the premium. Specimens offered for *exhibition only*, by others than the growers, must in all cases have the name of the grower affixed, if known.

5. All fruits and flowers exhibited must, as far as possible, be correctly named according to the standard nomenclature adopted by the Society, and it will be the duty of the standing committees of the Society to examine labels and correct all errors in nomenclature during the exhibition.

6. Where a certain number of specimens or varieties, or a definite quantity of any article, is required by the schedule, exhibitors should conform to such requirement; and larger quantities will not be admitted except by special arrangement with the Executive Committee, having reference to economy of space and the symmetry of exhibition.

7. Dishes and labels for the exhibition of fruits, and phials and stands for cut flowers, will be furnished by the Society, and no others will be admissible. No premium will be paid on any article which is accompanied by an advertisement or business card.

8. Exhibitors must see to the delivery of their contributions, and will be required to put them *in the places designated for them*. After the articles are arranged they will be under the exclusive charge of the Society, and the owners will not have liberty to remove them until the exhibition is closed. All reasonable precautions will be taken for the safe keeping of articles on exhibition after their arrival and arrangement upon the tables, but the Society will not be responsible for any loss or damage that may occur.

9. No premium will be awarded merely for want of competition, nor unless the article exhibited is worthy of it; and the committees are authorized to withhold the first and award the second or any subsequent premium, or none, at their discretion, according to merit. They are also to withhold all premiums from any articles not exhibited according to the rules, or where any unfair practice has been attempted by the exhibitor.

10. The committees are authorized to recommend gratuities for any new or rare fruits, flowers, plants, or articles of merit for which no premiums have been offered.

11. When a specimen is presented for identification, the exhibitor shall communicate all the information he possesses as to the origin and local appellation.

12. No member of any of the committees for awarding premiums shall, in any case, vote or decide respecting an award for which such member may be a competitor, or therein have an interest; but in such case such member shall temporarily vacate his place upon the committee.

13. All premiums awarded will be payable by the Treasurer in sixty days after the close of the exhibition: *subject, however, to the following conditions and limitations, viz:*

1st.—The Society guarantees to pay premiums and gratuities to the amount of \$500, but reserves the right, if more than that amount is awarded, to make such a *pro rata* reduction as will reduce the whole amount payable to that sum.

2d.—All premiums not applied for before the first day of January next shall revert to the Society.

3d.—The Society's premiums are open for competition to all persons residing in the State; but when premiums and gratuities exceeding \$1.00 and less than \$20.00 are awarded to a person not a member of the Society, the fee for membership will be deducted therefrom; and when premiums and gratuities amounting to \$20.00 or more are awarded to any person not a life member of the Society, the fee for life membership will be deducted therefrom; and in either case certificates of membership will be issued accordingly.

LIST OF PREMIUMS AWARDED.

Class I.—APPLES.

FIRST DIVISION.

RULES. Entries for all premiums in this division must consist of five specimens of each variety exhibited, and (except Nos. 18, 19, 20 and 21) of at least twenty correctly named varieties, and not more than fifty. Entries for premiums Nos. 18 and 19 must be separate and distinct collections, not embracing any other collection or specimens, and in awarding the premiums regard will be had both to the quality of the specimens and the value of the varieties exhibited.

By "named varieties" is meant such as are named and described in some standard work on pomology, or have been named and approved by some national or state horticultural society.

In adopting 20 as the number of varieties required in these collections (1 to 17), the Society does not intend to encourage the multiplication of varieties; and the committee will be instructed, in awarding the premiums, to have regard to *quality* and *value* rather than to the number of varieties, and will be authorized to recommend gratuities for meritorious collections embracing less than the number of varieties required as above.

AWARDS. For best general exhibition of apples, grown by the exhibitor in any part of the State: W. R. Wharff, Gardiner, \$15.00; Miss L. L. Taylor, Lakeside, \$10.00; G. W. Blossom, Turner, \$5.00.

Best general exhibition of apples grown by the exhibitor in Androscoggin County: John Dunton, Lewiston, \$10.00; I. T. Waterman, East Auburn, \$8.00; D. J. Briggs, South Turner, \$5.00.

For the same in Cumberland County: S. R. Sweetser, Cumberland Center, \$10.00; Milton Dyer, Cape Elizabeth, \$8.00.

For the same in Franklin County: M. C. Hobbs, West Farmington, \$10.00; E. F. Purington, West Farmington, \$8.00; Henry Judkins, \$5.00.

For the same in Kennebec County: E. A. Lapham, Pittston, \$10.00; Charles S. Pope, Manchester, \$8.00; R. H. Gardiner, Gardiner, \$5.00.

For the same in Knox County: Elmas Hoffses, Warren, \$10.00.

For the same in Lincoln County: E. W. Dunbar, Damariscotta, \$10.00; H. J. A. Simmons, Waldoborough, \$8.00

For the same in Oxford County: C. H. George, Hebron, \$10.00; S. M. King, South Paris, \$8.00.

For the same in Penobscot County: J. E. Bennoch, Orono, \$10.00; H. W. Brown, Newburg, \$8.00; E. H. Kenniston, Simpson's Corner, \$5.00.

For the same in Sagadahoc County: L. R. Powers, \$10.00; C. E. Sanford, Bowdoinham, \$8.00; H. S. Cary, Topsham, \$5.00.

For the same in Somerset County: F. E. Nowell, Fairfield, \$10.00; J. S. Hoxie, North Fairfield, \$8.00.

For the same in Waldo County: M. E. Bartlett, East Dixmont, \$10.00; Mrs. A. B. Strattard, Monroe, \$8.00.

For the best five varieties of autumn apples: C. H. George, \$3.00; S. R. Sweetser, \$2.00; D. J. Briggs, \$1.00.

For the best five varieties of winter apples: H. T. & S. E. Leech, East Monmouth, \$3.00; James Bickford, Carmel, \$2.00; F. E. Nowell, \$1.00.

For best collection of apples for house use: H. J. A. Simmons, \$5.00; C. H. George, \$3.00; S. R. Sweetser, \$2.00.

For best collection of crab apples: J. S. Hoxie, \$1.00.

SECOND DIVISION.

RULES. Entries for premiums in this division must consist of from five to ten specimens, according to size, of each variety exhibited, and must be separate specimens from any exhibited in the first division.

AWARDS. Alexander: Miss L. L. Taylor, \$1.00; J. E. Bennoch, 50c.

American Golden Russet: I. T. Waterman, \$1.00; T. M. Lambert, Auburn, 50c.

Baldwin: I. T. Waterman, \$1.00; D. H. Knowlton, Farmington, 50c.

Benoni: J. S. Hoxie, \$1.00; T. M. Merrill, New Gloucester, 50c.
Black Oxford: E. H. Kenniston, \$1.00; L. M. Berry, Winthrop, 50c.
Blue Pearmain: R. H. Gardiner, Gardiner, \$1.00; H. W. Brown, 50c.
Briggs' Auburn: Miss L. L. Taylor, \$1.00.
Cole's Quince: J. E. Bennoch, \$1.00.
Deane: Miss L. L. Taylor, \$1.00; J. S. Hoxie, 50c.
Duchess of Oldenburg: S. R. Sweetser, \$1.00; A. W. King, Charleston, 50c.
Early Harvest: T. M. Lambard, Auburn, \$1.00.
Fall Harvey: Miss L. L. Taylor, \$1.00; J. E. Bennoch, 50c.
Fameuse: S. R. Sweetser, \$1.00; F. E. Nowell, 50c.
Franklin Sweet: Miss L. L. Taylor, \$1.00.
Gravenstein: S. R. Sweetser, \$1.00; Charles S. Pope, 50c.
Grimes' Golden: E. A. Lapham, \$1.00; H. W. Brown, 50c.
Hightop Sweet: F. E. Nowell, \$1.00; H. S. Cary, 50c.
Hubbardston Nonesuch: Miss L. L. Taylor, \$1.00; T. M. Merrill, 50c.
Hunt Russet: F. E. Nowell, \$1.00: Elmas Hoffses, 50c.
Jewett's Fine Red: S. R. Sweetser, \$1.00; Miss L. L. Taylor, 50c.
King of Tompkins County: C. H. George, \$1.00; E. H. Kenniston, 50c.
King Sweeting: F. E. Nowell, \$1.00; A. W. King, 50c.
Large Yellow Bough: C. H. George, \$1.00; E. A. Lapham, 50c.
Moses Wood: Elmas Hoffses, \$1.00; Miss L. L. Taylor, 50c.
Mother: Charles S. Pope, \$1.00; Miss L. L. Taylor, 50c.
Northern Spy: C. H. George, 1.00; E. W. Dunbar, 50c.
Orange Sweet: J. S. Hoxie, \$1.00; H. W. Brown, 50c.
Peck's Pleasant: D. P. True, Leeds Centre, \$1.00; J. S. Hoxie, 50c.
Pomme Royale: C. H. George, \$1.00; Charles S. Pope, 50c.
Porter: E. G. Woodside, Lewiston, \$1.00; I. T. Waterman, 50c.
President: L. H. Blossom, Turner Centre, \$1.00; I. T. Waterman, 50c.
Primate: L. R. Powers, \$1.00; Miss L. L. Taylor, 50c.
Pumpkin Sweet: C. S. Chase, \$1.00; H. S. Cary, 50c.
Red Astrachan: S. R. Sweetser, \$1.00; J. S. Hoxie, 50c.
Red Canada: Lorinda Skillings, Lewiston, \$1.00.

Red Russet: S. R. Sweetser, \$1.00; Mrs. M. L. Robbins, Winthrop, 50c.

Rhode Island Greening: I. T. Waterman, \$1.00; C. H. George, 50c.

Rolfe: B. G. Allen, \$1.00; J. E. Bennoch, 50c.

Roxbury Russet: W. R. Wharff, \$1.00; C. H. George, 50c.

Russet: F. E. Purington, \$1.00; D. C. Averill, Temple, 50c.

Sops of Wine: I. T. Waterman, \$1.00; F. E. Nowell, 50c.

Somerset: Miss L. L. Taylor, \$1.00; F. E. Nowell, 50c.

Starkey: Charles S. Pope, \$1.00; A. W. King, 50c.

Talman's Sweet: L. Skillings, \$1.00; T. M. Merrill, 50c.

Tetofsky: J. S. Hoxie, \$1.00.

Wagener: N. W. Harris, Auburn, \$1.00; J. S. Hoxie, 50c.

Wealthy: S. R. Sweetser, \$1.00; J. E. Bennoch, 50c.

Williams' Favorite: J. S. Hoxie, \$1.00; Miss L. L. Taylor, 50c.

Winthrop Greening: L. M. Berry, \$1.00; F. E. Nowell, 50c.

Yellow Bellflower: R. H. Gardiner, \$1.00; H. W. Brown, 50c.

Crab Apples: J. Bickford, Carmel, 50c; Miss L. L. Taylor, 25c.

Class II.—PEARS.

For best general exhibition of pears: Samuel Rolfe, Portland, \$12.00; L. J. Perkins, Portland, \$8.00; D. P. True, Leeds Centre, \$5.00; John Dunton, Lewiston, \$3.00.

For best single variety winter pears, L. J. Perkins, \$2.00.

For best single variety autumn pears, L. J. Perkins, \$2.00; H. T. & S. E. Leech, East Monmouth, \$1.00.

For best dish of Bartlett: L. G. Jordan, Lewiston, \$1.00; C. A. Leavitt, Turner, 50c.

Belle Luerative: J. S. Hoxie, \$1.00; S. M. King, South Paris, 50c.

Beurre d' Anjou: L. G. Jordan, \$1.00; I. T. Waterman, 50c.

Beurre Superfin: D. P. True, \$1.00.

Beurre Clairgeau: D. J. Briggs, \$1.00.

Beurre Diel: D. J. Briggs, \$1.00.

Buffum: Samuel Rolfe, \$1.00; S. W. Shaw, 50c.

Clapp's Favorite: L. J. Perkins, \$1.00; A. B. Chipman & Son, West Gloucester, 50c.

Duchesse d' Angonleme: J. O. Howe, Lewiston, \$1.00; A. B. Chipman & Son, 50c.

Eastern Belle: J. S. Hoxie, \$1.00; J. E. Bennoch, 50c.

Flemish Beauty: Mrs. I. V. McKenney, Auburn, \$1.00; G. W. Blossom, 50c.

Glout Morceau: D. J. Briggs, \$1.00.

Howell: L. H. Blossom, \$1.00; J. S. Hoxie, 50c.

Lawrence: J. E. Bennoch, \$1.00; D. P. True, 50c.

Louise Bonne de Jersey: D. P. True, \$1.00; G. C. Chase, Lewiston, 50c.

Nickerson: H. J. A. Simmons, \$1.00; S. W. Shaw, 50c.

Seckel: Mrs. I. V. McKenney, \$1.00; S. W. Shaw, 50c.

Sheldon: S. W. Cook, Lewiston, \$1.00; G. C. Chase, 50c.

Swan's Orange: S. W. Shaw, \$1.00; C. H. Hibbard, Lewiston, 50c.

Souvenir du Congress: Samuel Rolfe, \$1.00.

Vicar of Winkfield: S. W. Cook, \$1.00; D. P. True, 50c.

Winter Nelis: J. E. Bennoch, \$1.00.

SPECIAL PREMIUM: Admiral Farragut, Eastern Belle and Indian Queen, J. E. Bennoch, 50c each.

Class III.—GRAPES.

For best exhibition of grapes grown with artificial heat: J. C. Baker, Lewiston, \$8.00.

For best cluster of Black Hamburgh, White Muscat, Muscat Hamburgh, White Chasselas, Lady Downes, Buckland Sweet Water, White Nice, Red Chasselas, Chasselas Musque: J. C. Baker, each, \$1.00.

For best exhibition of grapes grown in open air: J. S. Hoxie, \$5.00; D. P. True, \$3.00.

For best single variety grown in open air: Mrs. I. V. McKenney, \$2.00; J. S. Hoxie, \$1.00.

For best three bunches Delaware: J. S. Hoxie, \$1.00.

Hartford Prolific: J. S. Hoxie, \$1.00.

Adirondac: D. H. Swan, Waterville, \$1.00.

Wilder: D. H. Swan, \$1.00.

Worden: J. S. Hoxie, \$1.00.

Moore's Early: Mrs. I. V. McKenney, \$1.00.

Class IV.—PLUMS.

For best general exhibition of plums: John Dunton, Lewiston, \$8.00; D. P. True, \$5.00.

For best dish of plums of any variety: M. P. Hawkins, Auburn, \$2.00; E. W. Dunbar, Damariscotta, \$1.00.

For best Green Gage: L. R. Powers, \$1.00; C. H. Hubbard, Lewiston, 50c.

Purple Gage: J. S. Hoxie, \$1.00; E. W. Dunbar, 50c.

Red Gage: D. P. True, \$1.00.

Yellow Gage: F. E. Nowell, \$1.00; D. P. True, 50c.

Coe's Golden Drop: G. W. Chase, \$1.00.

General Hand: F. E. Nowell, \$1.00.

Yellow Egg: D. P. True, \$1.00.

Lawrence: J. S. Hoxie, \$1.00.

McLaughlin: E. W. Dunbar, \$1.00.

Lombard: C. H. Hubbard, \$1.00; Lorinda Skillings, 50c.

Smith's Orleans: D. P. True, \$1.00.

Class V.—MISCELLANEOUS.

For best peck cultivated cranberries: J. A. Morton, Bethel, \$2.00; I. T. Waterman, \$1.00.

For best exhibition of nursery pear trees: D. J. Briggs, \$2.00.

For best variety of canned fruits, pickles, preserves, etc., made and put up by the exhibitor: Mrs. D. H. Colby, Lewiston; \$3.00; Mrs. O. G. Douglas, Lewiston, \$2.00.

Canned peaches: Mrs. P. W. Murch, Lewiston, \$1.00; Mrs. Benson Grant, Lewiston, 50c.

Canned plums: Mrs. P. W. Murch, \$1.00; Mrs. A. W. Penley, Auburn, 50c.

Canned strawberries: Mrs. O. G. Douglas, \$1.00; Mrs. A. W. Penley, 50c.

Canned raspberries: Mrs. D. H. Colby, \$1.00; Mrs. O. G. Douglas, 50c.

Canned cherries: Mrs. O. G. Douglas, \$1.00; Mrs. D. H. Colby, 50c.

Canned quinces: Mrs. O. G. Douglas, \$1.00; Mrs. D. H. Colby, 50c.

Canned pears: Mrs. E. M. Leavitt, Auburn, \$1.00; Mrs. Benson Grant, 50c.

Canned tomatoes: Mrs. T. W. Murch, 1.00; A. B. Chipman & Son, 50c.

Preserved quinces: Mrs. D. H. Colby, \$1.00; Mrs. O. G. Douglas, 50c.

Preserved apples: Mrs. D. H. Colby, \$1.00; Mrs. O. G. Douglas, 50c.

Preserved plums: Mrs. O. G. Douglas, \$1.00; same, 50c.

Preserved pears: Mrs. D. H. Colby, \$1.00; A. B. Chipman & Son, 50c.

Preserved strawberries: Mrs. O. G. Douglas, \$1.00; Mrs. D. H. Colby, 50c.

Preserved raspberries: Mrs. D. H. Colby, \$1.00; Mrs. O. G. Douglas, 50c.

Preserved currants: Mrs. O. G. Douglas, \$1.00; Mrs. Benson Grant, 50c.

Preserved cherries: Mrs. Frances Hoyt, Winthrop, \$1.00; Mrs. D. H. Colby, 50c.

Tomato catsup: Mrs. O. G. Douglas, \$1.00; Mrs. A. W. Penley, 50c.

Jar quince jelly: Mrs. Benson Grant, \$1.00; Mrs. Frances Hoyt, 50c.

Jar apple jelly: Mrs. O. G. Douglas, \$1.00; Mrs. D. H. Colby, 50c.

Jar currant jelly: Mrs. D. H. Colby, \$1.00; same, 50c.

Jar strawberry jelly: Mrs. O. G. Douglas, \$1.00; Mrs. Frances Hoyt, 50c.

Jar grape jelly: Mrs. E. M. Leavitt, \$1.00; Mrs. O. G. Douglas, 50c.

Grape marmalade: Mrs. Benson Grant, \$1.00.

Canned currants, citron; preserved citron, cranberries, barberries: Mrs. O. G. Douglas, each, \$1.00.

Green gage jelly, rhubarb jelly, damson jelly: Mrs. Benson Graut, each, \$1.00.

Class VI.—FLOWERS.

FIRST DIVISION.

RULES. In this class no article can be entered for more than one premium. All plants and flowers entered for premium must positively be in their places at the exhibition room on the second day of the Fair at 9 o'clock A. M.

AWARDS. Best display of cut flowers filling not less than one hundred phials: Mrs. Charles Stanley, Winthrop, \$10.00; Mrs. A. B. Strattard, Monroe, \$8.00; Mrs. J. L. Douglas, Bath, \$5.00; Miss Cora E. Ring, Richmond, \$3.00.

For best display dahlias: Mrs. Charles Stanley, \$2.00; G. M. Roak, Auburn, \$1.00.

Asters: Miss M. L. Pope, Manchester, \$1.00; Mrs. Charles Stanley, 50c.

Gladiolus: G. M. Roak, \$2.00.

Verbenas: Mrs. Charles Stanley, \$2.00.

Chinese pinks: Mrs. Charles Stanley, \$1.00.

Pansies: Mrs. Charles Stanley, \$1.00.

Japan lilies: Mrs. Charles Stanley, \$2.00; Mrs. A. B. Strattard, \$1.00.

Phlox Drummondii: Mrs. Charles Stanley, \$1.00.

Stocks: Mrs. Charles Stanley, \$1.00.

Balsams: Mrs. Charles Stanley, \$1.00.

Chrysanthemums: Mrs. A. B. Strattard, \$2.00; Mrs. Charles Stanley, \$1.00.

Petunias: Mrs. Charles Stanley, \$1.00; Mrs. A. B. Strattard, 50c.

SECOND DIVISION.

For best pair parlor bouquets: Mrs. Charles Stanley, \$1.00.

For best pair wall bouquets: Mrs. Charles Stanley, \$1.00; Mrs. Frances Hoyt, 50c.

For best pair hand bouquets: Mrs. Charles Stanley, \$1.00; Miss Helen M. Hoyt, Winthrop, 50c.

Basket of wild flowers: Miss Cora H. Stanley, Winthrop, \$1.00; Mrs. Frances Hoyt, 50c.

Everlasting flowers: Mrs. Frances Hoyt, \$1.00.

Fancy basket of flowers: Miss Cora H. Stanley, \$2.00; Mrs. Frances Hoyt, \$1.00.

Floral design: G. M. Roak, \$5.00; Mrs. Charles Stanley, \$3.00; Floral pillow: Mrs. A. B. Strattard, \$5.00.

Floral wreath: Mrs. A. B. Strattard, \$2.00; Miss Cora E. Ring, \$1.00.

THIRD DIVISION.

For best exhibition of green-house plants: G. M. Roak, \$8.00.

For best exhibition of ferns, geraniums, begonias and coleus: G. M. Roak, each, \$2.00.

For single plants of tuberose, double geranium, salvia splendens, foliage begonia, flowering begonia, coleus, fuchsia and carnation, G. M. Roak, each, 50c.

PROCEEDINGS OF THE WINTER MEETING.

Proceedings of the Winter Meeting.

The annual Winter Meeting of the Society was held in Music Hall, Farmington, on Thursday and Friday, February 3d and 4th, 1887. The invitation to the Society to hold its meeting in this interesting part of the State was made by the Franklin County Agricultural Society, the Farmington Grange, and the citizens of Farmington. The local committee of arrangements consisted of M. C. Hobbs, West Farmington; D. H. Knowlton and S. R. Leland, Farmington, and Edward W. Hall, Chesterville; and the success of the meeting, one of the largest and most profitable the Society has ever held, is due in great measure to the excellent arrangements and earnest work of these gentlemen. The forenoon of the first day of the convention was devoted to a business meeting of the Society, at which the annual reports of the Secretary and Treasurer were presented, the election of officers for the ensuing year made, and reports of committees presented. The details of these several matters, with a list of the members of the Society, are found in other parts of this report.

FIRST DAY. AFTERNOON.

The Society met at 1.30 P. M., President Charles S. Pope, Esq., in the chair. Hon. J. G. Hoyt of Farmington was then introduced, who delivered the Address of Welcome.

ADDRESS OF WELCOME.

By Hon. J. G. HOYT.

Mr. President: Because it has been assigned to me to open this convention with a few remarks, it should not be assumed that I am qualified to impart instruction upon the subject which you have assembled to consider to-day, for there are many resident gentlemen

who are far better informed than I am upon fruit culture. I shall leave that subject mainly in the hands of the members of the Maine State Pomological Society and other practical fruit growers, who are amply able to entertain this meeting upon all matters laid down in your programme.

It is always in order nowadays (no matter what may be the immediate subject under consideration) for the American orator or speaker to roam at his will and speak upon such topics as he may choose. Availing myself of this license, I hope you will not consider it inappropriate in me if I spend the few minutes at my command in speaking of the past and present of Maine, as seen from the standpoint of one who has been cognizant of and, in a humble way, identified with the people of this State in their struggle for a better inheritance, industrially and socially, during the last four decades. Forty years ago the State of Maine was emphatically poor, meaning, of course, the people of the State. The farmers were poor, the mechanics were poor and the great mass of the people were poor. There was very little money in circulation, and the most of the business was carried on by barter or exchange, and always on credit of six months or a year, and then perhaps a long note with high interest. There were no markets in the State worthy the name. There were no railroads, no telegraph and no daily papers. There was no labor-saving machinery on the farm, in the shop or in the house. There were but very few industries in the State. There were no savings banks in the State simply because the people had no savings. And it was not known or believed that there were any resources on the earth, or in it, except such as might be developed in the line of agriculture. A large proportion of the farms were under mortgage at ten or twelve per cent interest.

Our young men, who should have been the strength and glory of the State as soon as they became of age, and oftentimes before, turned their backs upon us, impelled by some indefinable belief that somewhere beyond the present confines there must be a "land flowing with milk and honey" Our young women also left us to go into the mills and factories of other States, and into the families of the rich in the great cities, to earn money to clothe themselves with and to send to the poor ones at home. This is a dark picture, yet it is as true as dark. But the indomitable spirit of the "old stock" held their faces to the grindstone and endured. And now, without going into the processes and struggles of the people up out of that low estate, let us look at the other side of this picture.

To-day, we have railroads running through the entire length of the State, and from the sea-board penetrating back into the interior counties. We have the telegraph, the telephone and the daily paper. Thousands of industries have sprung up in all parts of the State. Resources have been developed that were never dreamed of forty years ago. Mills and factories have been built on all our streams and rivers. Savings banks have grown up in all parts of the State in which to store the savings of the people. The farmer of to-day is armed with modern improvements, and, with the markets of the world at his command, is not the scrimped-up man of olden times.

The great heart of the State is moved with the spirit of enterprise. The man of Maine sits down to his evening paper and learns through the "signal service" of the country that a blizzard is on its way east, carrying death and destruction in its path, and he congratulates himself that before it reaches Maine it will have spent its force. He reads perhaps in the same paper that yesterday the mercury was fifteen degrees below zero at St. Louis, and twenty below at Chicago, and thirty below at Minneapolis, and sixty below in Manitoba, and he is better satisfied with his own State than ever before. He reads of earthquakes in the "sunny South" but it creates no fear that his own walls are in danger of tumbling down over his own head. He reads of thousands of people in the south-west on the verge of starvation and he turns with thankfulness to the well-supplied homes of Maine. He reads of thousands of cattle perishing on western plains for want of shelter, and he rejoices in the knowledge that his own sleek horses and fat cattle and sheep are comfortably housed.

The man of Maine on the whole feels that our State is not only a good State to live in, but a good State to emigrate to. Maine, instead of being abandoned as formerly, is now sought by thousands of people from all over the country for her healthy climate, for her splendid scenery and for her glorious summers. From Old Orchard to Bar Harbor, yea, from Kittery to Calais, and from the mountains down to the sea, Maine is a vast summer pleasure ground.

Maine has her representatives in every State in the Union, and perhaps in every country in the world, and however honorable, and wealthy, and useful they may have become, and however happy they may be in their new homes, I doubt if there are many among all these sons and daughters who do not at some time have a longing to look once more upon these hills and valleys, these mountains and rivers, these school-houses and churches, and these homes and faces in dear old Maine.

Mr. President, yours is the advancing column of the coming industry of the Pine Tree State. You are the representatives of the higher life of the farmer. It cannot be denied that there is much in the farmer's life that is purely and simply drudgery, that never enlists his higher and nobler sympathies. But here is something ennobling and refining, something that captivates the mind. A man falls in love with it as the artist falls in love with his ideal. He commences with his tree no larger than his whipstick, and when it differs not much from the forest sapling or the sapling at the way-side, but he knows that inside of that bark there is the germ of a delicious, soul-inspiring fruit. He plants it, he waters it, and trims and educates it, and treats it as a thing of life; he follows it up through its slow growth and development until he sees it bud and blossom, and then the long-wished-for and long-waited-for fruit appears, and his soul has a satisfaction that the mere toiler for money knows not of.

Gentlemen, we welcome you to Franklin County, one of the smallest and humblest of the family of counties. Yet even here we have felt the pulsations of that new blood that has entered into the veins and arteries of the "body politic." Just as you enter the gateway of the county, there is a granite hill, which in the days of which I have been speaking, was barren and unsightly, and of value only as it furnished the underpinning for the few straggling houses in the vicinity, and for the outlying villages. During the year 1886 that hill has been the scene of a busy industry. One hundred and eighty-one skilled men have quarried and shipped eleven hundred and forty-six (1146) car loads of "paving blocks" for the streets of the great city of Cincinnati. They have also quarried and shipped six hundred (600) car loads of granite for the Maine Central Railroad and its branches, for bridges, culverts, and other masonry.

Other parties have cut out and shipped stone for monuments and building purposes, to the amount of fifty car loads more; and all this in addition to the ordinary home consumption.

Coming still farther into the county, there has been built within a few years a railroad up under the shadow of Mt. Blue and beyond, and the great "inland seas" of Northern Maine have been opened up, where the whole piscatorial fraternity of the country can come and gratify that immortal longing which has been transmitted down from or through Isaac Walton. Still more recently, a railroad has been built up towards the approaches of Mt. Abram, and

there, in the original forest where the sound of the "woodman's axe" was never heard before, mills have been erected capable of cutting out forty thousand (40,000) feet of lumber per day, and cars stand ready to transport it to the markets of the world. A large number of men are there employed, and it is estimated that they will work up during the season six million (6,000,000) feet of lumber.

We cannot boast of having any "money kings" in this county, and if we had them, I do not think that we should be any better off industrially, but we have "apple kings," and I notice that one of these potentates is on your programme to speak to-day. This gentleman raised this last season fifteen hundred (1500) barrels of apples, and every barrel was grafted fruit; and he manufactured his own barrels, and of that fifteen hundred barrels of apples he evaporated twenty-one hundred (2100) bushels; and that fruit thus prepared and put into the market in his inviting way, is worth as much as the best quality of raisins, pound for pound.

Perhaps the best illustration that I can give you of the thrift and general prosperity of our people may be found right here; just across the way there is an institution, modest and with little noise of machinery, but very telling in its figures; I mean the savings bank. You will find deposited there over four hundred thousand dollars (\$400,000) of the people's money, and not one dollar of the insurance money paid in, on account of the recent fires, is included in that amount. The People's Trust Company of this town has also on deposit three hundred thousand dollars (\$300,000) above its capital stock.

There is another savings bank in the thriving town of Phillips, with one hundred thousand dollars (\$100,000) more, making eight hundred thousand dollars of the savings of the people piled away in this little county. There are also three other banking institutions in the county with a capital stock of two hundred and twenty-five thousand dollars (\$225,000) more.

Gentlemen, on behalf of the Franklin County Agricultural Society and also on behalf of the Grange in this place, as well as on behalf of the farmers and the people of this town of Farmington, I bid you welcome. We welcome you to this once the "loveliest village of the plain," now stricken and humbled. Its magnificent streets were the pride of our own people, and the envy of those less favoured. Those streets were lined with the homes of cultivated and

intelligent people ; with comely and pleasant Christian churches ; with well-kept and prosperous hotels, and with substantial and beautiful business blocks ; but they all went down in one night, and in those ruins (for the time being) were buried the hopes and ambitions of a lifetime. But, thanks to the recuperative power of this people, we pledge you here to-day, if you will re-visit this place at some time in the near future, we will show you above those ashes, houses more costly and beautiful, churches more modern and complete, hotels more commodious and prosperous, business blocks more substantial and imposing, and a larger and more flourishing business. Hail to the possibilities of Maine !

The response to the above address was made in behalf of the Society, by the Secretary, Samuel L. Boardman.

D. J. Briggs, Esq., first Vice President, then assumed the chair, and introduced Charles S. Pope, Esq., who proceeded to deliver his annual address.

ANNUAL ADDRESS.

By President CHARLES S. POPE.

Ladies and Gentlemen : It was with pleasure we received the invitation to hold our annual meeting at Farmington, as we had for years desired to meet with the fruit growers of Franklin County. It is particularly fitting that we should hold a meeting at this time, here in the center of one of the finest fruit-growing sections of the State. We cannot wonder that the early settlers thought this a goodly land to possess, when we take into account its great beauty of scenery, happily combining mountain and intervale, and its fertility. Their descendants have added orcharding, for which the land is admirably adapted, to ordinary farm pursuits, and have carried it on so successfully that the region is now widely and favorably known for its orchard products. Among so many thoroughly conversant with the theory and practice of fruit growing we anticipate an unusually pleasant and profitable meeting.

Since our last meeting death has removed from our midst one of our most earnest and enthusiastic members, Hon. R. H. Gardiner of Gardiner. For three years President of this Society, he was one whom we shall truly miss, with his ready counsel and sympathy. He was ever ready to advance the best interests of the Society, either by his purse or his own personal efforts. I need not dwell upon this subject, as it will receive the more extended notice it merits from

the committee appointed to prepare a memorial of his life and labors. We may also fittingly mention here, the death of Hon. Marshall P. Wilder, the founder and President of the American Pomological Society. A long life actively devoted to advancing the interests of horticulture had endeared him to pomologists everywhere, and we, in common with our sister societies, gratefully acknowledge the debt we owe to this pioneer.

Having in his younger days a love for rural life, he chose farm work rather than a college course. Later he became a merchant in Boston, spending his morning hours in superintending the work in his garden and orchard. Since retiring from business some years ago he has spent nearly all his time in his favorite occupation, the culture of fruits and flowers and flora-hybridizing. It can truthfully be said that no man in this country has done so much for the cause of floriculture and pomology as Marshall P. Wilder.

Our September exhibition, which was held in connection with the State Fair, was in some respects more satisfactory than usual. We had all the space needed for spreading the fruit, and by making some changes in the arrangements of fruits and flowers, the exhibit was more pleasing and much more convenient for the awarding committee. While it is impossible in the rooms assigned us to make an artistic display, we think still further improvements can be made that will add very much to the attractiveness of the exhibition. I would again call your attention to the fact that it will be impossible to give satisfaction to exhibitors until we are able to employ expert judges who have no personal interest in the exhibit.

We recommended last year that the Society take some measures to encourage the setting of trees in public places, and we hail with pleasure the suggestion of Governor Bodwell, in his address, that a law be enacted, appointing a day, as a holiday, to be known as "Arbor Day," to be devoted to the planting of trees, useful and ornamental. We suggest a committee be appointed by the Society, whose duty it shall be to use their influence in giving this bill a passage.

I would call your attention to a bill which has been presented to Congress by Hon. W. W. Hatch of Missouri, entitled "A bill to establish agricultural experiment stations in connection with the agricultural colleges in the several States." It seems to us that this is a step in the right direction, and such a station rightly equipped, with competent officers, would be of incalculable benefit to the fruit growers as well as the farmers of Maine. How many fields of potatoes were

entirely destroyed before we learned how to kill the potato bug? How many apple trees were ruined by the forest-tree caterpillar, a few years ago, because we did know how to meet the enemy? And now we have the apple maggot, *Trypeta Pomonella*, with no remedy to stop his ravages, and the disease commonly called "apple scab," caused by a fungus named *Fusicladium Dentriticum*, which has caused more damage in this section than all the insects combined. I fear some of us will be obliged to abandon the raising of the Baldwin unless something can be found to check this disease. These and the myriads of other destructive agents call for help which could best be furnished by such a station.

I would recommend that a committee be appointed to urge our delegation in Congress to support this bill.

We would suggest meanwhile that all who are troubled with the disease called apple scab should be self-constituted members of a committee to experiment, both by feeding the trees, with a view of supplying some constituent that may be lacking in the soil, and by showering the trees while the apples are small with some mixture that will kill the fungus without injuring the foliage, and report at our next meeting. In this way something may be discovered that will keep the disease in check, without too great trouble and expense.

Since human nature is prone to indolence and neglect, except when pleasure and comfort are the immediate results of effort, many of us become indifferent and need to be reminded at least once a year that our fruit trees are calling for more dressing, that the borers need looking after, that the codling moth is increasing and the apple maggot is abroad, all urging better care and more attention, if we would make a profit from the orchard.

While some of these subjects require reiteration, there are still left other topics fraught with ever renewed interest—the comparing and examination of new varieties, improved methods of culture, and new modes of dealing with the enemies of the fruit grower. These admit of sufficient variations to keep alive an interest and enthusiasm and render our meetings as profitable as they are pleasant.

I would reply to the charge of sameness in my annual addresses as did the old preacher when his congregation complained because his discourse was about the same week after week: "When you mind this I will try and give you something new."

Following the address of President Pope, the next exercise was the presentation of the Gardiner memorial:

MEMORIAL OF HON. ROBERT HALLOWELL GARDINER, LATE
PRESIDENT OF THE SOCIETY.

By SAMUEL L. BOARDMAN.

From the foundation of our Society it has been a devout custom to place upon record in its Transactions memorials of its deceased members, thus preserving among the workers of to-day recollections of the lives and services of its founders and helpers of the past, as an incentive and for the emulation of those who will carry on its good work when we who are here shall all have become numbered with the "silent majority." In accordance with this pious and reverent example it becomes our sad duty to commemorate the life and work of the late Robert Hallowell Gardiner, a member of our Society from 1877 to his decease, and its President from 1880 to 1884.

Mr. Gardiner was descended from a long line of honorable and distinguished ancestry. His great-grandfather, Dr. Sylvester Gardiner, was born in Kingston, R. I., in the year 1707, was educated in England and France under the best schools and instructors, and became one of the most learned and accomplished physicians and surgeons of the time. He was one of the proprietors of the Kennebec Purchase, which, commencing its scheme of colonization in 1757, did so much for the settlement and development of the fertile sections along the Kennebec River, and as agent of the company was largely instrumental in shaping its policy and promoting its prosperity. To him the praise should be ascribed of settling the region of ancient Pow-nalborough and the entire Kennebec valley. In a history of the Kennebec Purchase, in the Collections of the Maine Historical Society (Vol. II, p. 279), it is said, "To his enlarged views, indefatigable exertions and liberal mind may be attributed those plans which so rapidly advanced the prosperity of the Patent." "He brought an uncommon zeal, a ripe judgment, great business talent and a powerful interest in the growth of the country to bear on this enterprise, and so confident was he of success that he was willing to commence at his own expense what the large company of Proprietors had never been able to accomplish." He received from the company a grant of four hundred acres of land, and continued to accumulate possessions of real estate until at one time he owned one hundred thousand acres of land. The present city of Gardiner was named in his honor. At the breaking out of the Revolution Dr.

Gardiner embraced the cause of Great Britain, left Boston with the British army and went to Halifax. His property was confiscated by Government and sold at auction, but in consequence of a legal flaw in the proceedings it was, at the conclusion of peace, restored to his heirs. Dr. Gardiner died August 8, 1786, aged 76 years.

A daughter of Dr. Gardiner, Hannah, married Robert Hallowell, who was born in Boston in July, 1739, and who died in Gardiner in April, 1818. A memorial tablet under the corner of Christ Church, in that city, says of him that he was "a man of firm integrity, distinguished courtesy, and strong affections." A son was born to Hannah Hallowell at Bristol, England, during the absence of his parents and grandparents to that country 10 February, 1782, and was named Robert. His grandfather, Dr. Gardiner, displeased at the religious and political views (he was a Unitarian and a republican) of his eldest son John, willed all his property to this grandson, when he was only five years of age, on condition that he should assume the name of Gardiner. This he did on becoming of age, in 1802, and a special act of the Legislature of Massachusetts, passed March 11 of that year, enabled him to take the legal name of Robert Hallowell Gardiner, he having just graduated at Harvard University ranking second in a large class which contained many afterwards very distinguished names. After graduating he spent two years abroad, and then came to the Kennebec to assume the management of his estate. He married, in 1804, Emma Jane Tudor of Boston, daughter of the late Hon. William Tudor, one of her brothers being the late William Tudor, the first editor of the *North American Review*, and the biographer of James Otis; and another, the late Frederic Tudor, who was the originator of the modern ice business and whose love for beautifying nature is shown in the tens of thousands of trees which he planted on the bleak coast of Massachusetts along what is now the beautiful and popular Nahant shore.

Mr. Gardiner was a man of great energy of character, singularly simple and unostentatious in manner of life, generous, kind-hearted and just. He was the first Mayor of Gardiner; the President of its savings bank from its organization to his decease; for many years an overseer and for nineteen years a Trustee of Bowdoin College; for a long time President of the Kennebec Bible Society; an influential member of the Board of Visitors of the State Hospital for the Insane, and for eleven years President of the Maine Historical Society of which he was one of the original members. He died 22

March, 1864, aged 82 years. A memorial stone in Christ Church, Gardiner, says, in the expressive language of the late Bishop Burgess, that from youth to old age he was the "leader, benefactor, and godly example" of the people of that parish.

Robert Hallowell Gardiner, third child and eldest son of the above, the subject of our present sketch, was born in Pittston, Nov. 9, 1809, the family moving the next year to Oaklands. In an autobiographical sketch of Mr. Gardiner, prepared for use in his college class biographies, with extracts from which your committee have been favored, he said of himself that "there are probably very few persons in attaining old age who can, like him, look back to their boyhood and youth without a single memory to mar the delights of those days," and that cheerful, innocent spirit, as innocent and fresh as a happy child's, remained with him through life, and enabled him to bear many trials and adversities without despondency. Mr. Gardiner was educated first by a private tutor at home, then at Partridge's Military Academy at Norwich, Connecticut, then at the Gardiner Lyceum—the first school established in this country for giving a scientific and industrial education, in the founding of which his father had done great service—after which he went to the famous Round Hill School, Northampton, Massachusetts, and then entered the class of 1830 at Harvard University, in the Sophomore class.

After graduating Mr. Gardiner engaged in business in this State, but was unsuccessful. He then accepted an invitation of Col. Long of the U. S. Ordnance Corps to go to Georgia and assist in making surveys for a State road from what is now Atlanta to the Tennessee River. There he spent three years, during which time he became attached to the lady who afterwards became his wife, Miss Sarah Fenwick Jones, daughter of Noble Wymberly Jones of Savannah. They were married June 28, 1842. A few years after their marriage it became necessary, for the management of Mr. Gardiner's large property, for them to remove to Augusta, Ga., where the attempt was being made to establish manufactures and develop the resources of the South. Into these business projects Mr. Gardiner entered heartily and did all in his power to promote their success. A friend who knew him at that period writes of him: "His life during this time was that of a private citizen, respected and beloved by the community at large, esteemed for his kind and charitable heart, and honored for the zeal he displayed in promoting the material interests of the South." He was the first President of the Augusta Manufac-

turing Company, and in 1851 was a member of the city council of that city. Mrs. Gardiner and her sister, afterwards wife of the Rev. William H. Harison, D. D., built, at their own expense, the Church of the Atonement, in Augusta, and to this work Mr. Gardiner himself gave a great deal of the labor of love. He was for many years a delegate to the General Convention of the Protestant Episcopal Church from Georgia, meeting in those sessions his father who had been for many years, and until his death continued to be, a delegate from Maine to the same body.

On the breaking out of the Rebellion, Mr. Gardiner and his wife came north, and afterwards visited Europe, where they spent several years. On the death of his father, in 1864, he took up his permanent residence at Oaklands, where the remainder of his life was spent. Mrs. Gardiner died in 1869. They never had children. Mr. Gardiner succeeded his father as Treasurer of the Maine Episcopal Missionary Society, and as Senior Warden of Christ Church.

After the death of his wife Mr. Gardiner devoted his time to the care of his orchard, farm and garden, and also to church and philanthropic work. In referring to this period the writer of an obituary notice in the Gardiner Home Journal says: "Through weary years the church and the Master's work have been to him his greatest joy and supplied the place of wife and children. They have been served with a heart pure and loving, ever ready to spend and to be spent in any good cause, ever ready to respond, and to even anticipate the call of charity and the cry of woe."

The famous orchard of Bellflowers at Oaklands was the especial pride and care of Mr. Gardiner. This orchard was planted in 1863, and commenced to bear for the first time in 1879. He gives an account of the same and its management in our Transactions for 1880-81. It numbers about three hundred trees and its yield in 1886 was seven hundred barrels. The care of this orchard and of his ornamental grounds and garden, was a source of constant pleasure to Mr. Gardiner, and many of the trees were grafted and pruned by his own hands. Meteorological records have been kept at Oaklands for nearly fifty years, since 1869 by Mr. Gardiner himself. He was greatly interested in this work, exacting as it was, and was very prompt in forwarding the monthly reports to the Smithsonian Institution at Washington, and to the local papers. Some idea of the exacting nature of the work may be gathered from the fact that each day's record demanded three different observations of temperature,

barometer, winds and cloudiness—and for each day's observations thirty-nine different columns of tables were required to be filled out, and at the end of each month nineteen different and additional columns, to contain the results of monthly averages. And yet up to only two days before his death Mr. Gardiner had filled out these tables himself. At the end of the month he has been many times known to work till 2 o'clock in the morning making out his averages and copying the tables for the Smithsonian and the public press. All this work was conscientiously performed for years, not only with no compensation, but at a considerable personal expense for instruments and apparatus. The Smithsonian regarded him as one of its best correspondents. In view of the value of these records and their increasing importance to science the longer they are continued, it is a matter for public congratulation that they were taken up at the point where Mr. Gardiner's accurate but weary hand stopped its work, and are now continued by Rev. Charles L. Wells, the rector of Christ Church.

Mr. Gardiner became a member of our Society in 1877, and took great interest in its exhibitions and meetings. Whenever possible he was a large exhibitor, and so long as health allowed attended all our winter meetings. At the annual meeting of the Society held at Lewiston in 1880, Mr. Gardiner was elected President, and received a re-election for three successive years following. His annual addresses, although generally brief, were well written, contained good thought, correct information and were chiefly devoted to apple orcharding, the specialty in which he was most interested. All his energies seemed to be engaged in behalf of our Society and its work, and many are the members who will long remember his animated presence and cheerful conversation while in attendance upon our meetings and exhibitions.

Mr. Gardiner was a member of the New England Meteorological Society, and of the Maine Historical Society. In the objects and work of the last named he was much interested, and the occasions were very rare when he did not attend its regular meetings at Brunswick and Portland, as well as its summer excursions.

The estate at Oaklands comprises about four hundred acres. It is one of the most lovely spots on one of the most beautiful of our Maine rivers—in the midst of fine and varied scenery. The mansion-house was built in 1835-36. It is of Hallowell granite, in the English style of architecture of the time of Henry VIII, with buttresses, tur-

rets and battlements of hammered granite. So distinguished an architect as the late Mr. Richard Upjohn, who designed Trinity Church, New York, was consulted in the making of its plans. Its main front faces the river—which is some four or five hundred yards distant—between which is a fine lawn. The house has a frontage of ninety feet, the large hall running the entire length, and its main portion extending to the roof. There are over thirty rooms in the house, the library, parlor and dining-room occupying the east front, being 14 feet high, and finished in plain solid wood. The library is large and rare, and upon the walls of the hall and parlor are family portraits of three or four generations, by distinguished painters, and copies by some of the best Italian artists of the more celebrated paintings in the Florentine galleries, obtained by members of the family when abroad. The cost of the house was \$32,000. For years it has been the seat of great hospitality and good cheer. The late Bishop Burgess writing of the life at Oaklands during the time of Mr. Gardiner, Sr., says: “The judges of the courts on their circuits did not fail to become his visitors. Every intelligent traveller from abroad who came to the Kennebec was almost sure to bring letters which threw open its doors. The clergy were ever honored under his roof for the sake of Him by whom they were sent.” Between 1822 and 1840, Oaklands was frequently visited by the late distinguished author, Hon. George Ticknor, who, in his memoirs, describes the daily life there as “like that which forms so graceful a feature in the country life of England.” In 1874, when on his eastern tour, President Grant and his suite were entertained at Oaklands, in right royal, though simple style, by the subject of our notice who was then its chief. By the will of Mr. Gardiner this place descends to his nephew, Robert Hallowell Gardiner of Boston, a young and brilliant lawyer, who intends to keep up its former character, and who has already become a life member of our Society.

During the past summer Mr. Gardiner had not been very strong, although his indomitable will and energy kept him active in spite of slight bodily indispositions, even when these were long continued and would to most persons have made them sick. He would not “give up.” “I must rally from this indisposition, somehow,” he said to his nephew only a few hours before he died, making an attempt to raise himself in bed—and this was characteristic of his whole life. It was his happiness to be busy, to be active, to be doing something for others. On Friday, Sept. 10th, he recorded his

meteorological observations and made up the table of the day's results. Our annual exhibition was to open the 14th, and he had been busy for a day or two in getting together his fruit, and making arrangements for the fair. On the 10th, he wrote a letter to your Secretary in regard to his exhibit, which was the last letter he ever penned. In it he said: "I fear on account of the drouth and the early date of the fair there will not be so good a display of fruit as usual. I hope, however, to be able to make a fair show. I have been quite unwell for some weeks but hope to be strong enough to go to Lewiston on Tuesday." He penned a few directions to his head farmer in regard to the exhibit which he was to make, and these were found upon his table after his decease and faithfully carried out. He died on Sunday, September 12th. Mr. Merrill took charge of his collection, some thirty varieties, and it was given the central place in the Kennebec County exhibit, marked off from the others by a festoon of crape. In the centre was a beautiful floral design, the work of Mr. Roak, which consisted of a wreath of white lilies and buff roses, cut in twain by a sickle of dark pansies, the handle of which was composed of white carnations. A mourning card contained the words "Robert Hallowell Gardiner, 1809-1886."

On the day of his funeral His Honor, Mayor Ladd, issued a proclamation to the business men of Gardiner, asking them, "in respect to the memory of a life-long and esteemed citizen," to close their places of business from 4 to 6 o'clock P. M., and this was universally observed, as showing the "respect due to an aged and honest citizen." The vestry of Christ Church passed resolutions in which was expressed: "His life has been replete with earnest zeal for the Master's cause and the good of the church, increasing more and more with each passing year unto its perfect end. The community has lost a valued citizen, the poor a friend and benefactor whose charity knew no bounds, and we a brother, friend and leader whose place in our hearts now thrills with pain at our loss—which is his gain." The Board of Missions of the Episcopal Diocese of Maine recorded its tribute to the deceased in these words: "We, its members, feel that it is an honor to ourselves rather than to him to recognize and recall his refined courtesy, his unvarying kindness, and his unostentatious liberality; and to have seen in him, one who, through youth, manhood and old age, was one who received the kingdom of heaven as a little child and has now gone home to his reward."

Obituary notices in the press of the State were general. The Gardiner *Home Journal* said: "The eyes of many will grow dim as they read that he has gone to join his wife in the home above, of which they loved to teach, and to which they sought to lead the way by the pure example of a godly life." The *Kennebec Reporter* said: "Public spirited as a citizen, scrupulously honorable as a man of business, affectionately liberal as a friend, his death will be remembered by the entire community." The *Boston Daily Advertiser* said: "The death of Robert Hallowell Gardiner in the Maine city named for his family, is an unwelcome reminder that a fine illustration is lost to us of simple and noble courtesy. The coarse aggressiveness of some newly rich people was offset, in a measure, by his winning example of gentle blood working out in an unpretentious life. New England is seeing many repulsive instances of money-made manners, and Mr. Gardiner's life ought not to be forgotten." These, among many other notices and expressions of a similar nature, show the worth of character of our deceased associate, and the esteem in which he was held by those who knew him best, and their mention in this sketch renders a more formal tribute of our own unnecessary.

His funeral occurred on Wednesday, September 15th, the Right Rev. Henry A. Neely, Bishop of Maine, officiating; being largely attended by church, parish and people—many distinguished gentlemen from different parts of the State being present. The church was simply decorated with golden rod and the wild asters, a chain of oak leaves from Oaklands being twined about the chancel rail. While our last annual fair was in progress, and thousands of careless visitors were crowding past his fine exhibit, devout men were carrying his remains to their last resting place in the little yard of Christ Church. In the blessed faith of our holy Christianity we believe that his ransomed soul had already been granted an abundant entrance into that glorious land where the fruits and flowers exist in a beauty and fragrance which is immortal.

At the conclusion of the reading of this Memorial, it was given a passage by a rising vote.

Mr. P. Whittier of Chesterville then read the following paper.

MY EXPERIENCE IN ORCHARDING, AND MARKETING THE FRUIT.

By PHINEAS WHITTIER.

Mr. President, Ladies and Gentlemen—I do not come before you as a fancy fruit grower with plenty of money to do as I please, but one who has been so cramped for funds as to labor under great disadvantages. Without saying anything against stock-raising, dairy-ing, grain-growing or any other branch of farming (for I think that there is a chance for fair success in any of those pursuits when intelligently engaged in by persons who love the business), I thoroughly believe myself when I say that there is far the easiest and greatest chance for satisfactory success in orcharding in this section of the State, for a person who likes the business, of any one thing I know of. Right here, let me say, that the surest way for a person to make a failure is to engage in that which he has no liking for. We have an abundance of good and cheap orchard land and are near good markets. We can raise the best and latest keeping fruit. All that is lacking is the right kind of men, those who have faith in the business, great courage, perseverance and a good share of patience to wait for the fruits of their labor. Not those whose faith and courage are good for one year and when ill-luck and circumstances make things look dark will give up beaten. There are many discouragements to meet, and he who would succeed must be a man of such faith and determination as to make a steady and long struggle and never give up. None others need expect to obtain any great reward, for in orcharding, steady and constant care is more necessary than in almost anything else. It is a settled conviction with me, that with an orchardist no better than myself, almost any of our hard and rocky farms, and even old pastures, now worth from \$500 to \$2000, can be made to produce for sale, each year, more value of fruit than they are now worth, besides getting something from stock, especially sheep. This is not guess work. I have worked this problem all out and proved it, and if any doubt it I can show how it is done.

Many fruit culturists go to Florida, thinking to make fortunes in orange groves, but many of them get discouraged because it requires more labor and expense in fertilizing and clearing the land in order to succeed than it would to get a good orchard of apple trees here in Maine, besides it must be a very favorable location for orange trees to

escape the occasional freezes. I think the chances for success are largely in favor of apple raising here, especially for any one without considerable capital. No matter how poor one is, if he is able to keep his farm and has his health, if he is made of the right kind of stuff, he can succeed as an orchardist here. Your worthy Secretary suggested that what I may say should embody my experiences, studies and observation as to orcharding. Now, I have not time to touch on but few of the many points of this subject, and if you will pardon me, I will first say something of myself, of the disadvantages, discouragements and hardships I have had to overcome to obtain what success I have, and speak of them for the encouragement of others who have like ones to overcome.

Orchardists, like poets, are born, not made, and if I can be called one you will see that I am not to be blamed, and I take no credit to myself. I cannot remember the time when it was not my delight to plant trees and watch their growth. After becoming of age, I worked by the month one season, and the next spring I bought 90 acres of old, rocky pasture and wood land for \$400 and all I could pay towards it was \$75. There were 60 or 70 old natural fruit apple trees on it, considered worthless. Not over 5 or 6 acres of the lot had ever been ploughed. It was good orchard land, but no better than thousands of other lots and not so good as many. The first three years I spent in clearing eight acres and building a house and barn and getting some of the old pasture ready for crops, which got me considerably more in debt. I then married and moved on to the place when 25 years old, and then commenced setting apple trees from a small nursery I had started on father's farm. I also commenced planting nurseries on my own land. I had the old trees grafted and I trimmed, cultivated and manured them, and I have taken a great deal of good fruit from them and they are quite profitable trees yet. I struggled along 4 or 5 years after that. My trees had not yet commenced bearing enough to help and I found with the strictest economy I could barely support my family without paying even the interest on my debts. I went to Massachusetts to earn money in a shop to pay my debts. With hard work, both myself and wife, I succeeded in three years and came back with the same determination to make a good fruit farm, and I went to work with renewed zeal, planting nurseries, setting trees and caring for those already set. After years of hard work and care I had got well under way with quite an orchard, when, lo! one spring when the snow went off I

found several hundred trees completely ruined by mice. Determined not to be beaten thus, I planted a larger nursery, set out all the trees I had that would do, and took great pains to guard against mice. After several years, when I had repaired damages and enlarged my orchard, the grasshoppers came and the next spring I found 500 of my trees dead and almost all of them damaged. I confess that I felt sick for a day or two, but it soon passed off and my determination to succeed rose higher than ever. I then had quite a large lot of trees in the nurseries and the next few years found me setting more trees than I ever did before, and working hard to repair damages. Soon after came caterpillars, and for three years it was a hard fight, but, as I could fight them better than I could grasshoppers, I did it so successfully that they did but little damage to my trees.

I have mentioned only a few of the obstacles I have had to overcome. In addition to everything else I, at two different times, lost \$2600, clean cash, and all before my orchard was any great income; and this has kept me continually in debt, at least until recently. So you see that poverty and hard luck has been my lot. You may ask what encouragement is there in all this? Well, I will tell you. I have steadily increased the sales of fruit from my \$400 lot from one or two hundred dollars after the first eight or ten years, to probably upwards of \$3000 this year, having already sold \$1825 worth, and I still have five or six hundred barrels of my best apples on hand, and my fruit is increasing faster than ever before, with a large share of my trees not yet come into bearing. I fancy that with proper care I have something that will last as long as my children and grandchildren may live. I have obtained this with only my two hands to help me, and have all the while depended on my farm to support my family. Hold, I have made a slight mistake. My better half should come in for a good share of the credit.

A man, having made a fortune in some other business, may take a notion to try farming. He can by lavish expenditure of money take an old, worn-out farm, and succeed in making it the most productive of any in the vicinity; and have the best stock, and the best and most convenient buildings and neatest surroundings, but at a cost far above the money value of the improvements, or what can ever be got out of them. This is one kind of success, but not the kind that those of us desire who depend on our farms for our support, and not the kind that many of us common farmers can stand a great deal of; but no one is so poor, if he has possession of an acre of

land, that he cannot start an orchard, and if cared for it will be something that will pay the best of any improvements that can be made by a person of limited means.

One of the most important things to make orcharding profitable is to know how to dispose of the crop to the best advantage, especially those that are not fit for an extra nice No. 1. I at first got me a cider mill and made large quantities of cider, and I must sell it to make it pay, and in doing so it made me feel so mean that I stopped it. I next tried feeding to stock, but that was not satisfactory. Then after evaporators came around I sold to be evaporated; that did better. I then bought an evaporator and have evaporated on my own account for several years, and I am better satisfied with this way of disposing of my No. 2 apples than any other I have tried.

When apples are plenty and cheap at harvest time, it requires some faith for most people to be at extra expense to carefully handle, sort and store them, but it will pay well every time. Roughly-handled and badly-sorted ones must be marketed early or they will be in very bad condition later, and then it is that extra nice ones will bring a high price, even if the market is glutted with the poor ones. I have never known it to fail. When I sold to agents who were buying for large city dealers, they would not and could not pay me enough extra to make it profitable for me to put up an extra nice quality; but when I began to send them into market with my own brand, to be sold on their merits, I found it to pay me well to have them very nice in every respect, and if any are a little nicer than the rest, I put them in the middle of the barrel. Only about one-half of the crop will, on an average, make such a quality of No. 1's as I send to market, and they will net me more money than they all would put up as apples are usually. About one-half of the remainder will make a very good second quality, that will pay some years to send to market, but I usually find it to pay best to evaporate them. I consider it absolutely necessary for those who raise several hundred barrels of apples to have each an evaporator, in order to dispose of the fruit satisfactorily. I think that two or three times as much net profit, one year with another, can be made by evaporating the poorest as in any other way, especially if pains are taken to make a very nice article. When I say poorest, I do not mean unripe, ill-flavored or crabbed, but that unfit for No. 1's by being bruised, wormy or under-sized. Such apples well pared, with extra care in trimming, and rightly bleached and dried, make a very

nice quality. For those who do not raise enough to pay for them to have an evaporator, canning can be done at a profit, and it would cost but a small sum to fit up for that on a small scale.

Apples should be marketed in good, tight, new, clean barrels of full size; but I warn you that it will be useless to have ever so nice barrels unless the fruit is equally good, and if it has not been carefully handled when picking and storing, the best sorting in the world after that cannot make them nice enough to bring a fancy price.

For those who raise limited quantities, and who do not wish to send into market their fruit under their own brand, I think more money can be obtained for their fruit by sorting it, as others usually do, than by making it extra good. It is the practice of some shippers to send apples abroad, No. 1 and 2's all together, with only care to cover the barrel heads with X's, and will pay about the going market price for them. If this can be followed it will be a good chance for careless fruit growers to dispose of their fruit, but I fear it will be bad for the reputation of Maine fruit. There is a greater difference in price between extra good fruit and that which has been carelessly handled and sorted, later in the season, than there is in the fall or early winter. Fruit that has been badly handled must be disposed of early or else there will be a great loss on it; and if it is put into market late it will be in bad condition, and then it is that very nice fruit will bring a very satisfactory price, and I have never known it to fail, often selling for nearly double market price. I cannot find language strong enough to express my contempt of the practice of deaconing apples, or putting good ones at the ends of the barrel and poor ones in the middle. It is the silliest and most suicidal practice I know of. What opinion can a man have of himself, to say nothing of the opinion of others, who sells fruit which he declares to be nice and alike all through but proves to be poor all except a few on top, and he knows he will be found out almost as soon as he is gone; and then again, how many times can he sell his fruit there except at the price of poor fruit, no matter how well it appears or what he says about it?

Many, if not most, of the wholesale buyers and commission men desire to have their apples put up with about one-half bushel of the best ones at the faced end of the barrel. If you are looking for a commission merchant, and he directs you to put up your apples in that way, look out for him, but if he desires to have them put up

alike all through, whether he is buying of you or is to sell on commission, you may score one for his honesty with you as well as his customers, and he is the one who will get the best price for your really nice fruit.

The fruit interest in this State is destined to be an important one and a profitable one too, if we will only take care to put it up as it should be in order to gain a high reputation, and every one who does not do so is an injury to the business. If we would increase our profits from fruit we had better spend our time and energies in increasing the production, than to spend them in trying to sell poor apples for No. 1's. I know of parties that try so hard to sell all of their crop for No 1, that they have to look up a new buyer every year. That is not the way to make orcharding profitable nor the way to make an honest man feel satisfied with himself.

Maine fruit commands a little better price than that from other States, but it is not because it is better sorted or handled, but because of its later keeping qualities. Where we now get twenty-five cents per barrel higher for our apples we should and could by care in putting them up get dollars more per barrel with such apples as we can raise. I wish all fruit growers and shippers could realize the advantages to be gained by establishing a high reputation for extra sorting and handling our apples and the sooner it is done the easier and better for us.

DISCUSSION.

Mr. W. P. Atherton. Do you manufacture your own barrels?

Mr. Whittier. Yes, sir, I have followed that practice for some years. I have the material worked up at the mill and put them together myself.

Question. The matter of feeding apples to stock is an open question and one of considerable importance, and I should like to know if you think it a profitable method of using up refuse fruit?

Mr. Whittier. In reply to the question I would say that in my opinion it is a practice that amounts to but very little. It may be of considerable benefit to the stock but I do not think it will pay, especially where you have to hire help. If you could do the work yourself it would be a good way of using up poor apples.

Question. What would you do when a man has from three to four hundred bushels of refuse apples which he does not know what to do with? That is my case and I feel too mean to make them up into

cider. What has been your experience, and have you experimented any in this matter?

Mr. WHITTIER. During the first of my experience as an orchardist, for about four years, I could do nothing else with the refuse fruit. I fed from three to six hundred bushels to sheep. They liked them very much but it did not pay me to do it. I should say that if a man had time and could afford to hire help it would pay, but if he could not I would employ some other way of using up the poor fruit. I know that it does not pay me to take care of it in that way.

Mr. S. R. LELAND, Farmington. Will it pay better to feed them to pigs than to sheep?

Mr. WHITTIER. I fed apples to a shoat from the fall until the following spring and could not see that the animal was in any better condition than before for having received them. I boil them until soft and then feed them mixed with meal or shorts.

Mr. D. J. BRIGGS, South Turner. I would like to return to the subject of barrels. What size barrel do you use and how much will they hold?

Mr. WHITTIER. The barrels are seventeen and one-quarter inches in diameter across the head, with the staves twenty-eight inches long. The way they are set up makes considerable difference with the amount they will hold. If the staves are narrow there is some bilge. I should mix the staves and thus insure a better uniformity in the capacity.

Mr. BRIGGS. We have been making our own barrels and there has been a great deal of discussion about the matter and much difference of opinion in regard to the amount that a barrel should hold. What do you consider the proper amount for a barrel to hold?

Mr. WHITTIER. I do not think I can state definitely in relation to it. There is a great deal of difference everywhere. Some heap the measure and others do not. I think it almost impossible to state, either by bulk or weight, the amount which it would take to make a barrel of apples.

Mr. LELAND. Has the time arrived for the use of new barrels?

Mr. WHITTIER. Yes, sir, it is time now.

Question. Do new barrels increase the value of the fruit?

Mr. WHITTIER. Yes, sir, because many of the old barrels that are picked up are unfit for packing apples into. I want good new barrels and then I feel safe about my fruit. I have tried both ways and think it better and in the end cheaper to use new barrels.

Question. What kind of wood is used for making the barrels?

Mr. WHITTIER. Most any kind of wood will do.

Question. Is poplar used?

Mr. WHITTIER. Yes.

Question. Is basswood used, and is there danger of its moulding?

Mr. WHITTIER. Basswood is unfit for barrels because it shrinks too much. Some buyers will take any kind of barrels. I bought one thousand barrels last year and would have been willing to have paid more than I did for them.

Mr. ATHERTON. What is the usual price for them?

Mr. WHITTIER. Twenty-five cents for old, and thirty-one cents for new ones, is what I pay.

Mr. BRIGGS. In our town we make about two thousand barrels and they are of beech and birch and have six hoops made of ash that are one inch and a quarter wide. We pay thirty-two cents a barrel for them and buyers say that they will pay ten cents more on the barrel where they are put up in new ones than they will when the barrels are old. Unless old barrels are cleaned by steam it is impossible to get them into condition fit to pack apples into them. Therefore, I should say use good, new barrels. It is with this as with everything else, the best packages bring the highest prices.

Mr. ATHERTON. I would like to enquire in relation to the influence which sheep have upon an orchard and also their influence upon the codlin moth. Most orchards are troubled with this insect pest and as my orchard is no exception I had the idea of putting in sheep if I could free it from their depredations. Are your apples more free from the influence of the moth on that account?

Mr. WHITTIER. My orchard is in three or four enclosures, all adjoining. The apples in the western portion, which is pastured to sheep, are not one-quarter as wormy as those in the other three parts. After the trees get to growing, if you have a large flock of sheep, there is but little need of much other dressing. A large flock is necessary, however, to furnish the needed amount. A ten-acre orchard won't do well unless a liberal supply of fertilizer is applied.

Mr. BRIGGS. Wouldn't it work to give these sheep an allowance of provender?

Mr. WHITTIER. Yes, I would pasture them in the orchard and give them also an allowance of provender and thus benefit both the orchard and the sheep and increase their value.

Mr. BRIGGS. I feed my sheep some provender, as they cannot obtain enough food to sustain them by foraging, and find that it helps

them very much. It is well known that sheep are advantageous in an orchard for many reasons. The apples are of very fine flavor and free from worms in orchards pastured to sheep.

Mr. WHITTIER. There is no animal that will eat green apples so well as sheep. They will eat them when they are in the blow up to harvest time. There is one thing that should be done. All who have plowed know that there is generally but about two inches of sward; well, if you mow that sward and plow, you will turn that sward eight inches deep. In pasturing all the earth should be in this condition and then it will produce the best results.

Question. Will you please give your experience in mulching?

Mr. WHITTIER. I cut all the way from thirty to one hundred loads of mulch each year and I wouldn't know how to get along without it.

Question. Do you mulch large trees?

Mr. WHITTIER. Yes, very frequently.

Question. Do you use any other mulch besides hay and straw?

Mr. WHITTIER. Yes. I use brakes sometimes, but would use hay when it is in the orchard. Hay used for mulch is worth ten dollars per ton.

Question. Do you have any trouble with the mulch harboring mice?

Mr. WHITTIER. Do not use the mulch too near the trunk of the tree, and you will have no trouble. Spread the mulch on thick so that it will kill the witch grass.

Mr. ATHERTON. Did I understand you to say that hay was worth ten dollars per ton for mulch? If good would you let the stock have it?

Mr. WHITTIER. I should use it on the orchard if it grew in the orchard. It will pay, however, to feed it to the stock and use the manure for the orchard. There is always plenty of material for mulch.

Question. Does it make much difference what you use?

Mr. WHITTIER. There are two things I would not use under any conditions, and those are green sawdust and apple pommace.

Question. Have you tried muck?

Mr. WHITTIER. Yes, I have put it on and plowed it in.

Question. What was the result?

Mr. WHITTIER. I got a good crop of hay and apples.

Question. What is the value of ashes as a mulch?

Mr. WHITTIER. They are good and will make nice fruit. I have not used ashes much, but like them as far as known.

Question. Have you used commercial fertilizers?

Mr. WHITTIER. No, not for trees.

Mr. BRIGGS. Have you ever made apple jelly?

Mr. WHITTIER. I never have. I have made many inquiries, and have nearly always found that those who have undertaken the business have failed. It is only the sour fruit that is used for making jelly, and it is unfit for such a purpose. If sugar was used and there was a good market for it, it might be made to pay pretty well.

Mr. BRIGGS. If we sort and sell only No. 1 apples, we must use up the other apples either by evaporating or by some other way, and if we can make a profit on jelly, why not make them into jelly? Many apples are not fit for evaporating and could be made into cider and then into jelly, and we could thus dispose of considerable second quality fruit.

Question. What kind of trees would you recommend planting?

Mr. WHITTIER. I have not used many other kinds than the Baldwin. I think the Baldwin the most profitable and best market apple for general use.

Question. How small should a perfect apple be to be classed as No. 1?

Mr. WHITTIER. I make three grades. The smallest I evaporate, the next go as seconds, and the rest as No. 1 apples.

Question. Would an apple that would go through a two-inch auger hole be classed as a No. 2 or 3? How about keeping apples?

Mr. WHITTIER. I should say an apple of that size would be about right to evaporate. In keeping it makes a great deal of difference in the kind of apple. Russets will keep well when kept in a tight place. Cover them well with paper to keep the air out, and then they will not wither and wrinkle. I should barrel them, if possible. For Greenings I use an open shallow box. Otherwise they will change color. I have kept some in bins and have now about six hundred barrels of my best apples in the cellar in bins. In regard to evaporating apples I would say further, that I evaporated last fall twenty-one hundred barrels of apples which yielded over six tons of evaporated fruit of very choice quality, samples of which are on exhibition here. This was all sold in one lot at 12 cents per pound, the order for its sale being sent to me by telegraph.

Question. How deep was the bin in which you had the apples?

Mr. WHITTIER. Two feet and one-half deep. Set in the bottom one tier of barrels, then floor over the top and lay in the apples three feet deep, in bins partitioned from each other.

Question. Is the cellar wet, or dry?

Mr. WHITTIER. Wet. The water runs into it in the spring.

Question. Do you use any other method?

Mr. WHITTIER. Yes, I store some in barrels.

Question. Do you ever store in bulk?

Mr. WHITTIER. Yes, I store in large bins partitioned off as before stated.

Mr. NELSON. I have always put my apples in large bins, and have taken three hundred barrels from one bin. I do not believe in having them too near the ceiling. The larger the bin the smaller the number of poor apples. I have often found the best apples nearest the bottom of the bin.

Question. What is the disadvantage in having them deep?

Mr. WHITTIER. It makes too much pressure on the apples at the bottom.

Mr. NELSON. I believe the less surface exposed the better.

Mr. WHITTIER. I never have any trouble with that.

Question. Do you carry them nearly to the floor?

Mr. NELSON. Yes.

EVENING SESSION.

A very large audience was present in Music Hall at the evening session, and at 7.30 the meeting was called to order by President Pope. Previous to the opening of the literary exercises the audience was favored with a piano duet, finely rendered by Mrs. Frank McLeery and Miss Agnes Allen. The first essay was on Floriculture for Children, by Mrs. Sarah B. Purington of the State Normal School, Farmington.

FLORICULTURE FOR CHILDREN—FLOWERS IN HISTORY, POETRY AND SONG.

By MRS. SARAH B. PURINGTON.

The little gardener whom I have in mind was three years old, a sturdy little boy in a gray Mother Hubbard, not taller than the garden gate through which he trotted, with a box of morning-glory seeds in his baby hand.

Walking the length of the garden, he soon returned to the house and scattered his seeds under the dining-room windows. He had been examining seeds, had watched the vigorous growth of a hand-

ful of beans under the tall leaves of a calla lily, and was interested in a very young apple-orchard and orange grove. Whatever seeds he had planted, had rewarded him with a most gratifying development.

He did not remember the flowers of the morning-glory, but he felt sure that the tiny black seeds, after lying a few days in the ground, would come up, fresh and green, and be more and more beautiful every day.

There is a lesson of faith as well as of patience in the planting of a seed.

One of the little gardener's vines was the first in the neighborhood to bloom, and a shout greeted the crimson flower. Other flowers soon gladdened the eager eyes, and there were exclamations every morning, "O, see! See these white ones! See these purple ones! O, see the bees rolling in the pollen!"

He plucked as many as he liked, to play with, or to give his friends. They were sometimes bells and sometimes umbrellas.

Not far from the morning-glories, he had two hills of squashes. Each pair of seed-leaves was welcomed with a burst of joy. Every morning the growth of the previous day was noted; and when, at length, the soft yellow bloom appeared, the child's eyes were large with wonder, and his "O, see!" brought the whole family out-of-doors. What would the magic vine do next?

In a few days one of the flowers left behind it a pretty green ball, which was soon large enough to take the place of one of the lost rubber balls, and it went flying about the yard till its destiny as a giver of knowledge and pleasure was accomplished.

At the end of the doorstep, the little gardener had his crowded hill of beans,—"little trees," he called the separate plants. These, too, were watched with his customary interest. Some of the blossoms were plucked, and only three pods ripened in the autumn. But these were a sufficient conclusion to the story of plant-life which he had been reading all summer.

He had regarded these pods as especial treasures, and when they grew yellow, he presented them to his dearest young lady friend.

Early in the following spring he began taking lessons in color, form and numbers from the geranium blossoms. He also learned some botanical terms. It is easy for a child, with his quick perceptions, bright imagination and unfailing memory, to learn even difficult technical terms. He likes the sound of a long word, and

smilingly repeats it to himself again and again, for its very music, till it is his own both in sense and sound. Many things in education which are burdensome to boys and girls in the High School are mere play to a child. At four years of age the little gardener began to have his own house plants, six or eight young geraniums in one broad flower pot. This was his window garden. "Mamma, here are some stumps," he remarked one day.

The word had been explained to him not long before, and he had just been illustrating it. With his scissors he had felled his entire geranium forest, and there remained only the bare green stumps, about two inches high. His little brother soon uprooted these, and the desolate flower pot was ready for a new supply of plants.

There was too much regret for the lost plants to allow any repetition of this experiment. The little gardener became so fond of his plants that he tried to be very careful of them, and rarely broke a flower pot. One day, however, some sudden motion of his was followed by a crash. Looking seriously down at the uprooted plant, and the earthen fragments upon the floor, he said, quietly inverting a sentence from Hawthorne, "I am more like a physical reality than a beautiful thought." But the accidents were so few that they are not worthy of mention, compared with all the pleasure that sprang from the little gardener's efforts.

The next year he had quite a collection of house plants. He liked to carry them from place to place in the yard, and sometimes across the street to show to a friend. So some strong, light flower pot seemed desirable. To meet this want, two or three rainy days were delightfully spent by himself and a few friends in the stable, painting some tin cans and decorating them with bronze grasses. These proved very satisfactory.

One morning a lady invited the child into her hot-house, and showed him more flowers than he had before seen growing together. As she watered them, she remarked, "It is a great deal of work to take care of these flowers."

"O," he replied, "I will tell you how we do it at home. We just plant the seeds and water them, and God does the rest. And they grow and bloom."

A young girl who taught a small school in a lonely place told me how much her scholars enjoyed a flower-bed which she assisted them to cultivate in their play hours.

A little neighbor of mine derived great pleasure last summer from a small package of mixed seeds. The furrows in which he sowed

them formed his initials, and he was very happy when his autograph appeared in small green leaves. The personality of the little plot was lost, however, in the summer growth, but there was abundant compensation in the number and variety of the flowers.

It is but a step from the garden to the fields. Children like to go with older friends to the woods in spring, and bring home ferns and wild flowers for shady places about the house. They are thus unconsciously cultivating an accuracy of observation upon which the telling of the truth greatly depends. They are learning to name and classify objects, to have many thoughts instead of few, to love Nature and reverence a Creator.

The little gardener soon becomes a little botanist. In his rambles he becomes interested in birds and insects, and so begins the study of natural history. Pebbles, bowlders and river-terraces have their stories to tell, and in listening to them he becomes a geologist. Sitting in winter before the blazing coals, he likes to hear something of the wonderful coal forests, and if no fossils are at hand, to see pictures of the fern-impressions, the sculptured lepidodendrons and sigillarids, and strange animals of those gloomy tropical swamps. A bit of marble possesses new interest to him when he knows it was once alive. He laughs to hear the long names that scientists have given to the great sea-monsters of the fifth day of creation, and has no difficulty in remembering them.

"I wish I had brought my microscope," said a little boy, looking at a flower one day last week. He knew there was a great deal in a flower that his eyes could not see. The same far-looking instinct may lead us away from living flowers to the fields of history, art and literature in which they have had their part. Kings have always surrounded their palaces with gardens, and heroes and poets have been crowned with myrtle and laurel. There was never a banquet without flowers. They have always been a social necessity. In battle they have marked contending armies. When Napoleon returned from Elba, all France wore violets. The Irishman loves the shamrock, the Scotchman the thistle, and proud is the story of the fleur-de-lis, the white lily of France, presented by an angel to Clovis at his baptism. A line of English monarchs is said to have derived its name from the broom plant, *planta genista*, used in penance by an ancestor.

Fascinating to the flower-loving child—who is usually himself a tasteful builder—is architecture, with its order, symmetry, its mani-

fold transformations of the most obdurate materials, and the transfusion through all of a subtle element in life. Long stories may be told over the engravings of Karnak and its lotus columns; over the acanthus-wreathed temples of the Greeks and the doors of cedar, the gold and silver leaves, the sculptured lilies and pomegranates of the Jewish temple. Moorish architects wrought delicately in leaves and flowers, and the grand Gothic builders, in the expression of religious faith and aspiration, sought all their designs in nature, as if they had the feeling of the Swedish poet Tegner: "We thank Thee, O God, that we are permitted to think thy thoughts after thee."

There is no literature without flowers. Many of our words have been suggested by plant-life, and writers are lovers of flowers. Chaucer loved best the blooming month of May. Spencer sang,

"Strew me the ground with daffodowndillies,
And cowslips, and kingcups and loved lilies."

The daisy, the cowslip, the daffodil, the lily and the rose have been sung over and over again by the English poets, and not a voice among them all would we like to miss. Sweet peas and poppies have not been forgotten. All the dear common flowers have their places in our literature. Every one is familiar with the

"Flowers purple, blue, and white,
Like sapphire, pearl and rich embroidery,"

that grace the wisdom of Shakespeare, and adorn the stately verse of Milton.

Cowper, who lived very near to nature, has given warmth and color to one of his winter poems by a few lines on the brilliant summer flowers, that were missed from the landscape.

There are sweet flower-passages from the Lake poets. Mrs. Browning writes of

"A thousand flowers each seeming one
That learnt by gazing on the sun
To counterfeit his shining."

Tennyson so loves the violet that he can find it in the dark. With the rose and the lily, it blooms beneath the cypress shade of "In Memoriam." He associates a beautiful truth with the thistle.

"Not once or twice in our rough island-story,
The path of duty was the way to glory.
He that walks it, only thirsting

For the right, and learns to deaden
 Love of self, before his journey closes,
 He shall find the stubborn thistle bursting
 Into glossy purples which outredden
 All voluptuous garden roses."

He seems to have embodied the universe in six lines.

"Flower in the crannied wall,
 I pluck you out of the crannies,
 Hold you here, root and all, in my hand,
 Little flower—but if I could understand
 What you are, root and all, and all in all,
 I should know what God and man is."

Shelley and Moore, Tennyson, Browning and Mary Howitt have written of the "light-enchanted sunflower." Here are three lines that can illumine a cloudy day :

"Miles and miles of golden green,
 Where the sunflowers blow
 In a solid glow."

The best American writers have said beautiful things of the flowers that grew in their mother's garden, or the wild-wood blossoms of their boyhood. Holmes loves morning-glories and damask roses, and Emerson the rhodora. Bryant wrote of the yellow violet in spring, and the fringed gentian in autumn. Whittier draws from field and forest beautiful lessons of faith and trust. Thoreau takes us into the heart of the woods. Mrs. Thaxter has given us a picture of the golden-rod with an ocean background.

"Graceful, tossing plume of glowing gold
 Waving lonely on the rocky ledge;
 Leaning seaward, lovely to behold,
 Clinging to the high cliffs' ragged edge."

There is a sweetness in Longfellow's allusions that is almost better than the flowers themselves. Hawthorne added beauty to whatever he touched. We all remember the scarlet flowering-beans in the old Pyncheon garden, and Phoebe's crimson rose that, for a moment, brought back his youth to the sad ruin of a man. Nothing can be more charming than the description of his garden at the Old Manse, and the cardinal flowers and pond lilies along the Concord river.

In our churches we still preserve a relic of the ancient floral offerings. Religion has been associated with flowers in sacrifices, in decorations, in emblems, and in the words of divine teachers. The

prophets often borrowed their imagery from the vine, the oak, the olive, the fir and the cedar. Daniel walked beneath the Hanging Gardens of Babylon. He who said, "Suffer little children to come unto me," gave from the fields the parables of the fig-tree, the mustard seed and the sower. Looking up from the blossoms at his feet into the faces of his disciples, he said, "Consider the lilies how they grow; they toil not, neither do they spin." "If God so clothe the grass of the field, which to-day is, and to-morrow is cast into the oven, shall he not much more clothe you, O ye of little faith?" Paul taught the resurrection to the refined Corinthians under the figure of the sowing of a seed, and the beloved disciple saw in the vision on Patmos, "the tree of life, which bare twelve manner of fruits, and yielded her fruit every month: and the leaves of the tree were for the healing of the nations."

Our race was born in a garden, "to keep and to dress it." We are making a garden of the world, and to paradise, the garden of God, we are destined.

To his inheritance in the world's wealth of thought, and to a true, ever-radiating life, I know of no better introduction for the child, than his own little garden.

After the reading of this essay a fine musical selection was rendered by a male quartette, consisting of Prof. George C. Purington, Rev. C. H. Pope, Mr. C. A. Allen and Mr. H. H. Rice. Following this a sketch showing the influence of flowers in the home, written by Mrs. Addie S. B. Weston, was, in her absence, read by Mrs. Love N. Ames of Farmington.

INFLUENCE OF FLOWERS IN THE HOME.

By Mrs. ADDIE S. B. WESTON.

"Were I in churchless solitudes remaining,
Far from all voice of teachers and divines,
My soul would find, in flowers of God's ordaining,
Priests, sermons, shrines!"

Deacon John Thompson owned the largest orchard of small fruits and the most beautiful flower garden in town. Every one admitted that, and also, that it was all the work of his wide-awake, ambitious daughter, Huldah, who had brought about this desirable transformation within the once neglected, old garden, with its rows of straggling currant bushes and rank stretches of parsley weeds and witch grass.

Huldah's influence, Huldah's orders and Huldah's strong, willing hands had brought it all about, the beds of bright flowers, the mats of strawberry vines, the pretty bordered walks and rows upon rows of thrifty young fruit trees—plum and apple and cherry, which black knot and curelio pests vainly tried to molest.

The south end of the Thompson garden skirted the road that wound over and around the hills that lay between two country villages; but the white pickets of its high, trim fence could not shut out from the view of passers-by, the beautiful blossoms and vines and ripening clusters of fruit therein.

“Huldah's garden is a living reproach to me, because we haven't a bit of a flower patch at our house;” or, “I never see Huldah's garden but I am tempted to lay out grounds just like it for our women folks;” or, “When I'm grown up, I'll have just such a garden as Huldah's, see if I don't! Flowers and berries and grapes and plums,—grists of 'em to eat and give away just as Huldah does; see if I don't!” were the thoughts that the beautiful, thrifty garden, with its wealth of color and fragrance, lying close to the country roadside, set stirring in the minds of old and young passers-by.

Voiceless yet earnest sermons are such grounds, waking into life warm inspirations and ambitions in those who will notice them, to go and do likewise. Who of us would dare measure the length and breadth of the influence such a garden carries, especially with the little children who longingly peer through the pickets, or, when permission is given, go eagerly tip-toeing along its walks, gazing with admiration and keen interest on this and that flower and plant, and stowing away in the active, retentive mind earnest resolutions and purposes to have just such beautiful blossoms and fruit and neatly kept flower beds and walks, when that long dallying ship comes in—“when I am grown up.”

Little Edith Quint, on her way to and from school, always stopped to run to Huldah Thompson's garden fence, to peer through its pickets and take note of the opening flowers and ripening fruit.

Rain or sunshine, it was the same, and Huldah often gave the little girl, who so eagerly watched her at her work, whether it was picking luscious fruit or weeding garden paths, handfuls of bright blossoms and red ripe berries. But to give her a budded cutting or a flower root she had not thought to do, not knowing but that the child had an abundance of such plants in her own home.

But Edith had not. Her mother had never tolerated even one house plant, because "they are nothing but weeds, anyway," she declared, "darkening the windows and littering the house." And Edith's father as stoutly opposed an out-door flower garden, because "good land that would grow potatoes and corn shouldn't be thrown away on a mess of prosy weeds!"

Acres and acres of land Edith's father had in his homestead farm; land enough to grow all the corn and carrots and cabbages he cared to raise; time enough to set onions and plant fodder corn and kidney-eyed beans, even to the sill of the house door that opened into the back garden, but no room or time to be given to the dear flowers whose fragrance and beauty helps so much in making life cheery.

So the Quints' front yard had grown up to briars and sapling lilacs and rank witch grass, slowly choking out the life of the brave, old snowball bush and peony roots that a busy house mother, years before, had taken from her butter-making and dish-washing to plant; but, now, for thirty years, the witch grass and the lilac sprouts had had their own way, and the old flowering plants, after such a brave but bootless struggle, had succumbed and all that remained of Grandma Quint's flower garden was a rank swamp in one corner of "Bouncing Bet" and "Butter and eggs." *They wouldn't die.*

"Please, Miss Huldah, please may I have just one of these pretty plants you have piled against the fence?" a child's shrill voice piped one October morning, and looking up, Huldah saw Edith's round face peeping through the pickets, while she eagerly pointed to a heap of thrifty petunia plants that she had uprooted for lack of garden room, and that they might not sow the ground with ripened seeds. The topmost plant on the rubbish heap she had piled for removal—seedling though it was—had put out a single bright crimson blossom, with plenty of buds promising more.

"It's such a pretty little red trumpet of a flower, and you've thrown it away: please, Miss Huldah, may I have it?"

"Bless you, dear child, yes. Just so many of the plants as you like." And the rejected petunia with its root ball of earth and healthy, green top crowned with a flaring, flaunting, crimson blossom, was carefully lifted, wrapped in damp moss, and given into the eager, up-stretched hands of the little girl.

She scampered home with her prize as fast as her little, racing feet could carry her. When she reached the shed door, she hid the brown parcel under its sill and went foraging round for an old tomato an she had seen in the rubbish of the back yard.

When Mrs. Quint laid down her sewing that October afternoon, and went into her kitchen to prepare tea, what do you think she found cosily perched on the broad ledge of its south window? A thrifty petunia plant nodding its green leaves, and saucily leveling two crimson flower trumpets at her, as though heralding: "We've come, and we've come to stay!"

And stay they did, and hundreds of other blotched and mottled and striped and streaked and clouded blossoms that put out through the long, cold winter their crimson and white flaring flower lips on that sporting petunia, that seemed trying for the very fun of the thing, to throw out as many strange markings and shadings of color in its flower blossoms as possible.

"It's clean, Isaac; there isn't a bug or a spider on it from root to top, and Edith has set her heart on having the plant this winter; supposing we keep the thing?"

"Well, then, keep it; keep the posy weed for all I care!" was the ungracious welcome Edith's parents gave the little seedling, whose mission was to brighten their home and whose influence would be felt through more than one generation.

The petunia grew as petunias will when given the right soil and atmosphere and a sunny south window over which it can throw its green arms, clambering right and left as it goes up, up, covered with scores of bright blossoms. Mrs. Quint thought well of the plant when she saw passers-by turn their heads to get a long, full view of her window with its beautiful curtain of crimson and white and green, and heard exclamations of admiration and covetousness from her neighbors. She thought still better of it when ladies from town called to beg slips of her sporting petunia, that came out with new markings of blotch and stripe with every flower opening; so odd and rare, that even Judge Davenport's wife drove out to ask for a cutting from her plant.

"I don't know whether it's the rinse water I give it, or the hot steam from my bilin' dinner pots, or, maybe, it's the winter sunshine that makes our petunia blow and grow so, but grow and blow it will," Mrs. Quint said complacently, as she snipped generous cuttings, here and there, from the plant for her distinguished guest.

Edith overheard that—"our petunia." It used to be "that thing," and "your posy weed," and she knew that house plants had come to their house to stay. Slips of ivy, rare geraniums, begonias and a host of other plants were brought and offered in exchange for those

of Mrs. Quint's petunia. She could not well refuse them, and Edith had such a "knack" of getting them to root and thriftily growing in her pretty papered and netted cans and disabled crockery, almost before she knew it, Mrs. Quint had her window ledge full of plants, and was just as eager and ambitious as any of her neighbors to have the best variety of house plants in the community.

Some one has said that when a woman takes a new tack, she never goes it by halves, and Edith's mother was no exception. She subscribed for a leading floral magazine that she might wage war against red spiders and rose bugs, plant lice and scales, understandingly and with sure destruction. Indeed, she became such an authority on the subject of insect extermination, and in the ready recognition and correct naming of rare plants, by the help of her well studied journal, she became a subscriber to other standard floral and agricultural periodicals, that she might keep fully posted and her reputation might not suffer from any mistakes.

Edith and her brothers also read this new literature that had come into their home, and enjoyed it. Wide-awake growing boys will read something, and if interesting, pure matter is not furnished them they are apt to turn to that which is entertaining and unclean, thus staining their minds and hearts. The Quint boys were just at that age when yellow-covered, "blood and thunder" literature creeps in, but their mother's beautiful floral magazines and fresh, breezy journals, coming into their home every week or month, headed it off and filled their minds with a real love and zeal for better things. The clean, bright pages illustrated the making of rustic shelves and seats, hanging baskets and other ingenious designs. The boys read, thought, planned, whittled, sawed and hammered, and pretty brackets, rustic trellises and swinging plant rests, "just like those in mother's book," grew under their busy hands, all helping in the good work of making home beautiful and the children happy and contented in it.

One article on "Window Shelves" sent them clattering round in the garret, till they had unearthed from a pile of rubbish two old bedstead head boards of bird's-eye maple, richly stained with age and past all warping with their seventy years of seasoning under that same house roof. The boards were cut down to the right length and width, and mounted on stout, iron brackets before upper lights of a south window. When Edith's thrifty seedlings and clambering vines had been placed on them, filling the window from sill to top with beauty, and the neighbors came in to admire and approve with hearty

words, there wasn't a woman amongst them but that went home to forage over her own attic in search of an old, disabled head-board of oak or cherry wood, to oil and polish for a plant shelf.

These same live floricultural papers, full of breezy instruction, opened the eyes of the Quint children to the possibilities coming from odd, beautiful growths in their father's woods—moss-grown old knolls, richly stained half circle shelves of fungus formation, queer knots and quirks of deformed limbs and the twisting, coiling stems of the bitter-sweet vine. In the search for such growths, they woke to new interests in the fields and woods.

An out-door flower garden followed naturally and readily in the wake of Edith's house plants. Geraniums need good bedding through the summer months, drooping coleus and roses quickly take on leaves and hardiness when given a foothold in out-door soil, and they got it and they kept it in the Quint garden. Sods of witch grass were first broken in little patches, here and there, just to make room for the budding annual or brown bulb some friend had given, but not long was it before the sods between the patches were upturned, the soil cleared of grass roots and a goodly part of the wide old garden laid out in pretty flower beds with rows of thrifty fruit canes and vines, of which the boys had learned and been filled with ambition to raise, from careful reading of the healthy journals that now came into their home. The dimes and quarters which, doubtless, would have been exchanged for tobacco, had the Quint boys, when a little older, followed their father's example, were spent for choice varieties of fruits; and which, think you, was the wiser investment?

Years ago, we of the "Fifth Reader class" used to stand in a long row on the dingy boards of the school-room floor and repeat in concert, with more force than eloquence, Mary Howitt's beautiful poem :

"God might have bade the earth bring forth
Enough for great and small,
The oak-tree and the cedar-tree,
Without a flower at all."

Yes, God *might*, but glad and grateful are we that our Creator saw fit to give us, and so lavishly, beautiful flowers. With their help we may make our homes so full of cheeriness that the children will not be tempted from them by outside impure influences. Any resource within our reach that will help develop purity of thought, and recognition and love for God's beautiful creations in the hearts

of our little children, is a resource we should not slight. Then, will any of us refuse to give in-door room and out-door room to these beautiful plants and blossoms that God gave

“To comfort man,—to whisper hope,
Whene’er his faith is dim,
For whoso careth for the flowers
Will care much more for Him”!

By birthright a little child loves bright things,—color, light, sunshine and gay flowers. How the little busy-bodies love to toddle round mamma’s flower beds, snapping off the bright blossom heads till their aprons will hold no more, or till they are discovered in their mischief. How their sweet baby faces dimple with smiles, and the wee, dainty hands eagerly outstretch for the proffered gay blossom! What a pity to make of such beauty-loving little folks prosy, short-sighted men and women whose thoughts have grown so fearfully practical, that the sunshine to them means only so much growth or curing of their crops, and “daises and buttercups, sweet-wagging cowslips” and “brave marsh Mary-buds, rich and yellow” that star their meadows with golden blossoms, simply as desirable feed for their cows, whose “baitings thereon will insure gilt-edged butter!”

Snubbing, cramping and crushing every timid or brave effort that the children may make to bring a little beauty into their bare homes, may kill out, in time, the desire for anything outside the hard old ruts in which their fathers travelled so long. How much wiser to encourage everything in our children that tends to fill the busy brain with pure thoughts and so head off those that are bad! The culture of flowers will help. The sunnier, the happier our childhood’s home, the stronger its influence for good over our after life. Do you believe the grown-up children, out in the world for themselves, will stray very far from their mother’s teachings, when the sight or fragrance of flowers like hers cause a rush of memories so sweet and precious, there is a longing for home and her presence?

“I never see a bed of the lilies of the valley, or smell the breath of their spicy white bells,” said a grey-bearded man who had made his home in a foreign clime, “but that I am carried back to my boyhood’s home, with its plot of sweet lily sprays by the door, and memories of mother, her wise counsels, come fresh in mind, though she has been in Heaven this fifty years.”

Knowing this, that every green cutting, or flower bulb or root that we may send out into the world, or give culture in our own home,

may carry an influence for good long after we have done with earth, shall we not do all we can to secure foot-holds in every home within our reach for these plants, "Whose voiceless lips" are "living preachers, each cup a pulpit, every leaf a book?"

SECOND DAY. FORENOON.

The convention was called to order at 9.30 A. M., President Pope in the chair. The attendance was much larger than on the opening day; and the large display of fruit arranged on tables running the entire length of either side of the hall, formed an attractive feature. The first exercise was a paper by Mr. L. H. Blossom.

DEFECTS IN ORCHARD MANAGEMENT.

By LEANDER H. BLOSSOM.

What are some of the chief defects in our present system of orchard management?

First and foremost, in starting an orchard that will in the future be an honor and a profit to the owner, it must be started right. And just here we are met with the question as to what is right. This point wants to be carefully studied, for if we make a mistake at the beginning it will be a mistake all through the life of that orchard. If the start is intelligently made then the success of the orchard is, generally speaking, assured.

LOCATION.

For a moment let us look at the best location for an orchard. What is it? Why a north or a westerly cant. Why? First, because the land on the north or west cant is less liable to a drouth than land on a southerly cant. Second, an orchard on a northerly cant is far less liable to winter kill than one on a southerly cant. In fact, I have never seen an orchard planted on the north cant, no matter how bleak and exposed the situation, but the trees were sure to winter all right.

How often do we see, in riding through the country, an orchard planted on the south side of some high hill. The orchard has been planted in the best manner, all the care and attention that are possible had been given to the orchard, the land had been highly enriched, the

soil thoroughly pulverized, in fact everything had been done to make it a model orchard. It was just getting well into bearing, and soon would have been a source of profit as well as pleasure to the owner, when lo ! and behold, he awoke one fine spring morning to find that his trees were nearly all winter killed. A sudden cold wave had come down on them in March, after a long spell of very warm weather, and in one short night that beautiful orchard was ruined. Brother orchardists, let us take a lesson from this, not to plant on a south east, no matter what the inducements may be.

Again, what shall be the height of our trees, from the ground to the limbs ; or in other words, shall we have a high-headed, or a low-headed tree? Both have their advantages and disadvantages. Long-bodied trees will admit of working around them with a team better than low ones, but they are more exposed to the winds than the low trees, the trunks are more exposed to the burning suns of summer, thus causing sun-scald, than low ones. I think the tendency with too many of our farmers is for the high-headed tree. I think many times they come from the nursery trimmed too high.

DRAINAGE.

Another mistake is in the proper drainage of orchards. Let us remember the old saying that "what is worth doing at all is worth doing well." This applies more especially to the orchard not only in the preparation of the soil but in the drainage. I believe we should drain deeper for an orchard than for any other crop. I recollect draining a part of one of my orchards one fall. The trees in that part of the orchard had never seemed to thrive and grow as well as I wanted them to, so I put an underdrain between every row of trees, digging the drain three feet deep ; and the next summer it was surprising to see the change in the trees on the drained land, over those on the undrained land. The foliage was of a darker hue, the trees made a better growth, looked healthier, came into bearing younger and bore better, in fact, were better in every respect and have already paid the cost of drainage.

I believe almost any soil is better for being drained, especially if we intend to plant an orchard upon it.

PRUNING.

Perhaps a few words in regard to pruning at time of transplanting may not be out of place just here.

My rule has been to prune the top in proportion to the amount of roots cut off at the time of digging, thus preserving the natural balance of the tree. Should the roots be dry, cut the top out rather more. In pruning at this time I prefer to cut out all unnecessary branches; then, if the tree needs any more pruning, I cut back those that have grown the most. This will probably be all the pruning necessary.

I prefer this mode of pruning to that of cutting the top back, as is practiced by many at time of planting, as it makes less wounds to heal over. Now, don't think that this is all the pruning that your trees will need; you must prune every year, so that when your trees come into bearing you will have no trouble in passing through the tops of your trees to gather the fruit.

How many have not had their clothes as well as their patience most sorely tried, in crawling through the tops of their trees after the fruit; and when they got it, it was of a poorer quality both in flavor and color—for certainly an apple grown in the shade is not to be compared for a moment with one grown in the sun. While the well-ripened apple fills all the demands of the market, the poor, unripened, shade-grown fruit is neither fit for the market nor for home use. Brothers, let your light shine—let in a little more sunlight.

I worked for a Lewiston firm some four weeks this winter, packing apples for the foreign market, and I have about come to the conclusion that I could tell what kind of a farmer a man was by his fruit. If his apples were large, smooth and handsome, free from worms and bruises, I put him down as a good farmer. If, on the other hand, his apples were small, pale in color, poor in quality and all covered with dents and bruises, I marked him down as a poor farmer. While in the first case the apples were mostly No. 1's, in the second case about half would be No. 2's. In the first case there was a profit, in the second a loss. The first man would tell you that orcharding paid, the second, or No. 2 man, would tell you there is no money in the business. But I am sorry to say that we have too many like the second man in every town and neighborhood in the State. We find them everywhere. No, not everywhere—they are never found at the Pomological meetings, for they can't get time to go; "it don't pay."

TOO MANY VARIETIES.

One more suggestion, and then I am done. That is in regard to the multiplicity of varieties. It is certainly one of the greatest evils

that can befall the orchardist to grow too many sorts. I noticed in my work this winter where there were twenty-barrel lots, ten of them would be Baldwins, the other ten would comprise from eight to ten different varieties. Now, all the profit in that lot of apples was in the first ten barrels.

And now, if in preparing this paper, I have offered one thought or suggestion that will be of any benefit to any one here present, I shall feel well repaid for preparing the same.

The following essay was then read by Mr. D. H. Knowlton of Farmington, Treasurer of the Society.

NOTIONS—POMOLOGICAL AND OTHERWISE.

By D. H. KNOWLTON.

Several influences have been at work in Maine during the last thirty years, which have resulted in largely developing our fruit productions. Previous to that time there were many notable failures in certain lines of fruit culture, but true, earnest pomologists had established the fact that Maine possessed certain natural conditions of soil and climate, particularly favorable for the production of the very best fruit. This fact was believed by many, previous to that time, but somehow the farmers generally did not imagine that their own farms were adapted to the production of fruit. Nor did they realize that fruit growing for the market would ever become a very important feature of our agricultural industries. Our natural conditions having been found to be favorable, the work began. There was much to do, for although the conditions referred to were favorable, there was little knowledge of varieties and their adaptation to these conditions. The State Board of Agriculture, through the medium of its excellent reports, was one of the earliest organized efforts to promote the interest of fruit growing. Several local societies were organized and by their public discussions were very valuable aids to the farmers among whom they were held. It was about this time the Maine Pomological and Horticultural Society was organized. It numbered among its members some of the most successful fruit growers in the State, and during its existence rendered most valuable service to the State. For some reason the Society ceased to exist and its records were lost, after a few years of active work. It was not till 1873 that the Maine State Pomological Society was organized and fully equipped for active duties. Under the leadership

of Secretary Gilbert, its first president, the Society entered upon its career of usefulness. Since that time it has held annual exhibitions and annual winter meetings without interruption. In hastily examining the reports of the Society during these years I recognize the unselfish work of those who identified themselves with it. Our State is large in area and the climatic conditions vary greatly in different parts, and many fruits thriving in York County would perish in Aroostook snows. The published reports show what has been done by the Society from year to year. The ground covered by the doings of the Society may be summarized under four general heads, *culture, varieties, marketing and esthetics.*

THE CULTURE AS TREATED IN THESE REPORTS.

In many parts continuous cropping has exhausted them of those elements essential to the growing of the best fruit. The raising of good stock from the seed, the preparation of the soil for setting, the fertilizing, the pruning, the protection of the trees from mice, the borers and other enemies, these and other matters connected with the culture of fruits of all kinds may be found in these reports. It was a notion of our fathers that only the most valuable tillage land was adapted to orcharding, but the teaching of Maine fruit growers to-day leads us to the conclusion that upon a large part of our rocky hillsides apples of the best quality may be raised. Moreover, that when raised in these localities the fruit is much less annoyed by insects, while the trees are hardier from their exposure, the fruit more highly colored and having far better keeping qualities than apples growing in more sheltered spots. This fact is an important one, for a knowledge of it enables the farmer to retain for tillage the land best adapted to it.

There are several notable instances in Franklin County where individual farmers have increased the value of their farms by orcharding, and to a few of these I invite your attention :

On a rocky side-hill with northwesterly slope, in the town of Chesterville, is a tract of land covered with fruit trees, some 4,000 in number. The hill is so steep and the outeropping boulders so large and plenty that a man can hardly drive a sheep among them. Mr. Whittier in his excellent paper has told you how much he paid for this tract of land. Sixteen hundred barrels of apples on paper does not look very large, but when these apples put \$3,000 into the farmer's pocket-book, there is a substantial commercial value in orcharding. This is about what

these trees have done the past three years. Many of them have not come into bearing yet and they are all young. Upon our exhibition tables Mr. Whittier has kindly placed an exhibit of his evaporated apples, from which he tells you he has netted this year over \$1,000. Doesn't this evaporated fruit suggest to you that our fruit has a market value not yet appreciated by our farmers? There is no danger that evaporated apples like these will not sell for a fancy price, and Mr. Whittier has no monopoly in their production.

Some twelve years ago, Mr. Nelson Libby purchased seventeen acres of land in the town of Temple, upon which a gentleman had set a fine lot of apple trees. A set of ordinary farm buildings was erected, and twenty-five acres of pasture land was purchased upon the other side of the highway. The first purchase cost \$500. A little over a year ago he was offered \$5000 for his fruit farm, and he was unwilling to sell for less than \$7000. The past three years this orchard has averaged some over 600 barrels each year; besides, the last year he raised over 100 bushels of pears. The pasture land, I will add, is just as good for orcharding as the orchard itself.

In the northern part of Phillips, Mr. Silas M. King & Son have developed a fine fruit farm. A meadow has been converted into a cranberry bed, where as fine berries are grown as anywhere in Maine. Apples, pears, plums and grapes here thrive wonderfully well, and yet the entire farm without the fruit planted upon it would be worth no more than pasturage or timber land in the same locality.

Last spring, Hon. R. P. Thompson & Son of Jay purchased an upland farm for about \$2500. The farm cuts some thirty tons of hay, and is well divided into tillage and wood land. The original owner set in one pasture 300 native apple trees, and set them to Baldwins. This man, strange as it may seem, is driving a truck team in one of our cities. But the orchard this year produced some over 300 bushels of marketable apples. After fencing the lot, pruning and mulching the trees for an undivided half of the orchard, a reliable party offered one-half the price paid for the entire farm only a few months earlier. Thus it is, thousands of acres of our rocky, unprofitable hillsides could be economically converted into profit-paying orchards. All it needs is the intelligent, wide-awake farmer to take advantage of the situation. There are others here who have made equally as good records as those referred to, but enough to show how orcharding enhances the value of these lands has been said.

BEST VARIETIES DETERMINED BY EXPERIENCE.

There are thousands of varieties of apples and pears, known and described in Downing's great work on "Fruit and Fruit Trees of America." Strange as it may seem, a large part of the trees planted in Maine have been grown in nurseries outside of the State, and sold to our farmers by the tree agent. The model tree agent, as you all know, is a well-dressed gentleman of fluent speech, and, equipped with his beautifully-colored plates of fruit, he has been known, even in our own county, to sell crab apple trees by the dozen to a single farmer. The best fruit growers in the State have long ago learned that many of the apples known to be good in New York State, and farther south, are worthless here in Maine; and the words of these fruit growers recorded in the reports of the Society, have kept many a man from buying inferior varieties. I remember attending an exhibition of fruit not long since where our friend Bennoch had a remarkably fine display of apples consisting of 114 named varieties. I asked him how many were of value in Maine, and he replied, "Not more than a dozen." The Society has repeatedly said to the farmers of Maine, "too many varieties for profit." At the same time it has encouraged people to provide for home use the best they could raise. The other day one of our farmers told me he sent to a nurseryman for a hundred Tompkins King stock for his orchard; the nurseryman wrote him back advising him to set a different variety, but one which has no market reputation at all, while the King is near the highest in the markets. The fruit growers of Maine who have read and studied the doings of our Society, or who have attended its meetings, know better than to plant new and untried varieties for profit. The frequent fruit lists published by the Society are of great value to our fruit interests, and show what fruits are successful in Maine. My own notion is that we should revise this annually, and if the catalogue could be classified under such titles as "Apples for Family Use," "Apples for Market," etc., it would aid some of us very much in understanding more fully the facts we want to learn from it.

A lecture recently delivered before the Massachusetts Horticultural Society on the "Degeneracy of Fruit and Vegetables" said upon this subject:

"Pears are comparatively short-lived in southern climates, and varieties imported from France to this country are not as a rule long-

lived. Grafting the pear tends to shorten the life and impair the vigor of any variety, and since all varieties are multiplied in this way, it becomes a question of time as to how long any variety can be expected to live. Fifty or sixty years ago the St. Michael was justly esteemed the best pear grown; it is now entirely abandoned. The Flemish Beauty is another excellent pear of twenty or thirty years ago, but is fast going out of use.

In 1838 Mr. Wm. Kenrick published a list of twelve old varieties of pears, none of which are grown to-day; and eighty-seven new kinds, of which seventeen are now occasionally seen, four of these still survive as valuable pears, the Bartlett, Bosc, Seckel and Duchess. In 1839 Mr. W. R. Prince of Flushing, L. I., published a list of three hundred and sixty-seven varieties of pears; of these thirteen now survive. There have been many hundreds of new varieties imported since then, of which less than twenty are retained as worth cultivation; many of these, of course, were rejected for various other reasons, but many would still be in cultivation, if they were not degenerated.

Of sixty varieties of apples cultivated fifty years ago, forty now remain. Among good varieties that have failed recently, are the Early Harvest and Newtown Pippin, but the Rhode Island Greening is as good now as one hundred and fifty years ago, and in England the Costard has been a favorite apple since the thirteenth century.

Cherries and plums do not seem to degenerate at all; the same varieties are grown now that were well known one hundred years ago, and are quite as good as ever.

The strawberry, however, seems not to be a long-lived fruit. At best it seldom exceeds thirty years in valuable condition, with the single exception of the Alpine variety, which seems as good as ever.

Of those popular now, most are new kinds, very few are over twenty years old. Currants are all long-lived, and the old kinds seem as good as ever."

This affords another illustration of the importance of our work to the people of the State. Every man cannot afford to spend his time and energies in ascertaining the value of individual fruits. Life is too busy and too short for this, and there is no need of it; for from year to year, as we meet together, the papers and discussions before the Society are very likely to point out the defects of varieties, as well as to bring before the public the value of the new ones. In this

matter the experience of successful fruit growers may be accepted as a safe guide in the selection of new stock for replacing the old, or in setting out new orchards and gardens.

MARKETING THE FRUIT CROP AN IMPORTANT QUESTION.

Not many years ago the apple growers in Maine who were fortunate enough to have a few apples for sale took them to the village store in bags and baskets, but now so great has the country become in the production of apples that Maine fruit not only goes from State to State in search of consumers, but in immense quantities is shipped by ocean steamers to foreign marts. The apples have to be properly picked, sorted and packed if they are to sell for the highest prices. Only a few years since an apple grower not a thousand miles from here sent some laborers to gather his fruit. You ought to have seen them do it. A long pole was used to beat the apples from the limbs they could not reach and in this bruised condition the apples were put into barrels and placed upon the market. Another man handled his apples as carefully as he would a nest of fresh-laid eggs, and for his trouble received nearly a dollar extra on each barrel he sold. Both men were raising apples for profit, too. The supply of barrels is another matter often discussed at our meetings. The time has come when Maine needs more flour barrels than its people can empty during the year. During the fall an apple buyer said he had a car-load of barrels shipped from Boston to his railroad station, on which the freight was fifteen cents per barrel. On investigating the matter it was found the Boston and Maine Railroad received four cents of this amount and our enterprising Maine Central the balance. More barrels were needed from the same source and a special rate was secured after a good deal of difficulty—but even then the Maine Central got the lion's share, for it carried the barrels a less distance and received six cents and the Boston and Maine the same as before. This, too, for empty barrels that must go back over the road again when filled. It may be time for us to say something as a Society upon this matter of freights. Again, I notice that it costs one-half as much to send a barrel of apples from here to Boston as it costs to send them from that point by steamer across the ocean. So rapidly are our fruit-growing interests increasing that all these matters connected with marketing should receive in the future even more careful consideration than the Society has given them in the past. At several points in Maine parties are making barrels for orchardists and some

are making their own. This is likely to become still more important in the future as there is greater demand for shipping purposes.

THE ESTHETIC WORK OF THE SOCIETY.

Thus far at all the exhibitions of the Society it has been my privilege to attend, the fruits and flowers have been well displayed. Several exhibitions of the Society have been especially fine in this respect. The influence of a beautiful array of fruits and flowers is far-reaching, especially when visited by thousands from different parts of the State. I do not think we spend quite enough now, however, in this direction. I have visited exhibitions of fruit that were massed together in such a rough-and-tumble way that no good impression whatever was left. There are many smaller exhibitions of fruit in the State and ours can but make its impress upon them, particularly when it is notably attractive. The esthetic idea does not end here, for upon hundreds of tables in our State, could we look in upon them, we should see fruits more attractively arranged and more invitingly served. Then, again, the flowers are carefully studied and every new design of floral beauty is remembered by hundreds of flower-loving people, and who does not love and enjoy flowers when in their innocent beauty they tastefully adorn our homes? Let us continue this good work by making our exhibitions more esthetic in their arrangement, while in our winter meetings we may be able to do in the same direction even more than we have done in the past.

EDUCATIONAL WORK OF OUR AGRICULTURAL ORGANIZATIONS.

This leads me to suggest several ways in which we may increase our usefulness in the State, in fact I am not quite sure but it is our duty to do very much more than we are doing. I have endeavored to show that our Society in its work is a public educator in the State and country. It is well for us to recognize our attitude towards the public in this respect, and to the extent we may have influence call to our aid the other organizations and institutions in the State. It is encouraging to note that there is a demand among our more intelligent people that our agricultural organizations shall become more useful by more fully occupying their respective fields of labor. The Board of Agriculture being at the head of all these bodies should always be in advance of them. The Board is doing a good work but we should like to see it do better. Perhaps it may be visionary but

we maintain that every farmers' institute should be a model of excellence, that the programme should be so made up and advertised that the farmers and others in the locality where held will anticipate the pleasure of attending the meetings, knowing from previous announcements that they will be of a high order. If this cannot be done with the present appropriation, would it not be better to hold less institutes and make them of a higher order?

I notice with satisfaction the talk made in and about our Legislature relative to making it the duty of the agricultural societies to do more educational work for the farmers. Some of them do too much educational work now but it is not the right kind. From some cause, many immoral features seem to have entrenched themselves within the exhibition grounds and halls. It is difficult to remove them and put something better in their place. There has been great progress, however, and it is with special satisfaction that I have noted the improvements in the Maine State Fair. The evils are not all gone yet, but we believe the future will see still less of them.

FARMERS' MEETINGS DURING THE FAIRS.

For several years there has been more or less talk about farmers' meetings on the fair ground during the exhibition, but as yet I have not known of any body of farmers who cared to hold such meetings in the open air, especially when surrounded by bawling medicine men and hawkers. The idea, however, of such meetings is a good one and if a suitable place was provided for the purpose, say a wing of the exhibition building parted off and furnished with comfortable seats and lights, there would be no difficulty in holding such gatherings. The State Society would require it one or more evenings, the Pomological Society could arrange a programme for another evening. There are several other State organizations such as the Bee Keepers' Association, the Stock Breeders' Association, the Patrons of Husbandry, the Board of Agriculture and others,—enough in fact in a few years, by holding single meetings each, to have something of public interest transpiring during the entire fair. The annual business of these various organizations could be more cheaply transacted during the State Fair than at any other time, papers could be read, discussions introduced, and a vast amount of agricultural information could be imparted to the public. The horse trots and other attractions outside the building might draw the crowds, the Lewiston *Journal* might have to issue a larger paper and employ a few extra re-

porters, but I see nothing so far as the interests of the State Agricultural Society and the public are concerned that would not make these annual gatherings within the Society's grounds more popular and vastly more educational. I have read the doings of various national gatherings during the American Fat Stock Shows in Chicago. Can any one doubt the value of the work done by them? So potent are they that the direct influence of these meetings is felt from the Atlantic to the Pacific, on the Maine farm, the western cattle ranche and even in the halls of Congress.

SOME ONE NEAR TO EXPLAIN.

The exhibits may be made more instructive in many instances, if there could be some one near at hand familiar with them to explain them to the crowd. One of the most valuable exhibits of the last fair in Lewiston was a fine display of the various ingredients of which commercial fertilizers are made. The exhibit was made by our State College at Orono, and had there been at hand a professor or a corps of students to have explained to the farmers the exhibit in detail, it would have been an excellent advertisement for the College and a grand opportunity of helping the farmers. This is no more than one of our western agricultural colleges is doing. We can do a little more in our department in the same way, though I think exhibitors for various reasons are likely to be found near their own fruits a large part of the time, and so far as it has been my privilege to meet them they are always ready to give any information in their power.

MORE AGRICULTURAL TEACHING NEEDED.

The larger part of our people are engaged in agricultural pursuits, and it is a lamentable fact in view of this to know how little agricultural teaching is done in the public schools. There are studies with reference to future industrial pursuits, but agriculture is not among them. There would be no difficulty in introducing the study of natural history, which would include our domestic animals, the birds, reptiles and insects. Among these are found the enemies to fruit culture, and their habits once learned in the school-room would the more easily enable future generations to prevent or in a measure control their ravages. Children are naturally very fond of flowers, and will enjoy their study. This study carried a little further covers the entire production of the soil. It would help the farmer

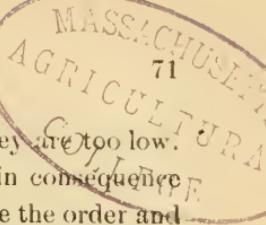
and the fruit grower alike, besides, the knowledge of plant life would always be a source of pleasure and satisfaction to its possessor.

ARBOR DAY AND ITS OBSERVANCE.

I like very much the idea of an Arbor Day in Maine, not that I have any great fear from the depletion of our forests during the present generation. For, aside from their destruction by fire, I think there is no great depletion in them not fully made good by growth from year to year. It may be that in our southern counties it is not true; it may not be true in Aroostook County, but in most others I think it is. The doctrine of protection here, however, is a good one, and I believe there should be no unnecessary waste of our forest trees. Arbor Day, however, has immediately rather to do with the beautifying of our homes and our public places, and as such ought to be generally observed. Suppose our school teachers should plan for Arbor Day, and set a few trees about the play grounds. The old school-houses would not look quite so lonely, and the new ones would be less conspicuous in their nakedness. A very interesting programme could be made up, giving all the boys and girls a chance to take some part. A little care should be exercised in setting the trees so as to secure the best effects possible. The outlook, if there happens to be one from the school-room, should not be obstructed. A clump of evergreens in the corners, and sometimes elsewhere about the premises, is far more beautiful than long rows of deciduous trees. They should not be planted so as to shut out the sunlight, for this we all need to make our rooms light, pleasant and healthful. There is one tree we rarely see in Maine as an ornamental tree, and yet there is none more graceful or more easily grown. It bears pruning well and may be grown successfully singly, in clumps or in hedges. The hemlock, *Tsuga Canadensis*, deserves a place among our ornamental shade trees, and we are glad to notice that gardeners are using it more. Its beauty is not alone during the summer months, but all the year. The poet says:

"O hemlock tree! O hemlock tree! faithful are thy branches!
Green not alone in summer time,
But in the winter's frost and rime!"

There is a custom here of which I do not know the origin, but I think it is entirely wrong. Before setting out the sugar maple, which is one of the best shade trees, the top is cut back and only the side branches are allowed to grow. These limbs grow rapidly and in a few



years it is found necessary to cut them off because they are too low. The wounds caused by this do not heal readily and in consequence many of the trees thus treated slowly decay. Reverse the order and trim off the low side branches and let the tree grow tall as it may. It will make a graceful tree and grow to a ripe old age.

Yes, let us have Arbor Day, but let us observe it with public exercises by our schools and churches. And why not go further still and observe the day in planting trees about our homes, making the event notable in the family history by some social or literary gathering that shall give special interest to each tree as it is planted. There is not nearly enough of this sort of thing in the State, and we may profitably observe the day.

GIVE THE SCHOOLS A PREMIUM FOR FLORAL DISPLAY

One more recommendation and I am done. It was long a custom of Mr. James Vick, the well-known Rochester seedsman, to offer free all the flower seeds the school children would plant upon the school grounds. The idea was a beautiful one, but I never knew whether many or few seeds were called for. Few of our Maine school grounds, however, are cared for as they should be. It would be an easy matter to make them beautiful and attractive by devoting to them a little care. We have known a lady teacher to successfully handle a school containing a lot of unruly troublesome boys, by simply interesting them in making flower-beds in the school yard, where a few hardy annuals were planted. The flowers were well cared for by the boys, who during the school not only took special interest in them, but, as a matter of fact, became studious and cheerfully obedient to all the rules of the school. The flowers in the school yard did it, and this sweet influence is felt throughout the land where the cultivation of flowers is permitted, whether in public grounds or in the private garden of the humblest tiller of the soil. The cultivation of flowers should be encouraged still more by this Society, and I would recommend that one or more liberal premiums be offered to the schools in Maine that will make the best display of flowers grown by the children within the school grounds. It will not cost the Society much, and the influence would be permanent. I do not imagine there would be a crowd of competitors the first year or two, but in future years it would become more general.

Our various agricultural organizations are intended for the dissemination of knowledge among the people of the State. The public

funds to a large extent maintain them, and it is time for a closer union among them. They have also the right to expect the aid of our public schools. The future development of our great natural resources must largely be the result of the combined educational work of all. There is no occasion for other than cordial feelings among these organizations. We must show the public that we are worthy teachers, that we are deserving of confidence, and convince the people, moreover, that our object is above all things to make true, useful men and women, by placing within their reach a knowledge of the means by which the goal is reached.

DISCUSSION.

The remainder of the forenoon was occupied with a discussion of the papers read, the main features of which are presented below:

Mr. T. M. MERRILL, New Gloucester. Last year I had trees that were all matured and seemed to be full of apples, but when picked they would average only about half a bushel to a tree.

Mr. D. H. KNOWLTON of Farmington. The King of Tompkins in this county, though not a very large bearer, produces an average crop as good and marketable as that of any other variety raised.

Mr. MERRILL. It must be that the King of Tompkins does well, according to the amount of this variety exported. I would like to ask those who have grown this variety, how they regard it and what kind of fertilizer they use for the trees?

Mr. ATHERTON. I have had some experience in growing the King. I do not like the idea of pitching into anyone, but I sometimes get a misapprehension of the meaning of a writer, as I have the one who read the first essay. The trouble came when he laid considerable stress on planting trees on land sloping in certain direction, afterwards saying that under no considerations should an orchard be planted on a southerly cant. What is a man to do when he has no northern slope upon which to plant his trees? I want to say to such, don't be discouraged; plant on a southern slope and observe the rules and you can succeed. Some of our best orchards are planted on a southern or eastern slope. During one time I had the privilege of visiting the farm of T. B. Hunter. He showed me an old orchard on a hillside, having a steep slope to the south, planted with native fruit, and the orchard succeeded well. There was something about it that made

the fruit hardy. Then, take it in Hallowell. We have there nothing but southern slope, and we have splendid orchards of New York stock. Mr. G. H. Wingate from only one acre gets most gratifying results. From sixty to one hundred barrels are grown in his orchard and it is situated on a southern slope. Not far off is another orchard on the same slope, productive and healthy. While I agree with the writer that a northern slope is the best, I believe that other slopes will also do extremely well.

Drainage is an all-important feature in successful orcharding. When an orchardist doesn't have his orchard well drained he will have trouble from the effects of the snow in winter. If we haven't confidence in nursery stock grown outside of the State, let us grow our own trees and when they are first set out mulch them well and keep the frost under the mulching. When this is done they are better able to stand the thawing. I believe we ought to be interested in forestry. I remember of being at a meeting of the Board of Agriculture in Augusta and advocating forestry, but I was sat on by the fat member from Washington County. I have seen a good deal of danger to our forests. Farmers are exceedingly to blame in the matter of forests. How many are there among the farmers of the State who protect the forests? Not one out of ten; I know that. They cut down the trees and let in the cattle, which is a most injurious practice. I have seen acres entirely ruined by having been browsed by cattle. It can't be done. I have seen where a forest was cut off forty years ago, now looks nicely from the very fact that no cattle were allowed to run in it. I endorse the appointment of Arbor Day as suggested by Ben : Perley Poore, and think it a subject well worthy of our consideration.

Mr. NELSON. I would like to know Mr. Blossom's reasons for preferring a northern cant.

Mr. BLOSSOM. My reasons are that the trees are not so liable to winter-kill, and that all of our best orchards are planted on any other cant than a southern one. I don't say but what there are good orchards on other land.

Mr. NELSON. I fully agree with Mr. Blossom in the general points of his essay. There is one thing further, however, that he hasn't alluded to in relation to the Baldwin. On a northern slant they did not do as well as on a southern one. However, I think the best cant for an orchard is the barn-yard cant.

MR. BLOSSOM. This winter I have had a little experience in relation to position. The apples in my town, on the River Road, about forty barrels of nice fruit were grown on a hill. Across the river are apples grown on a westerly cant that are better.

PRESIDENT POPE. There is something else besides the cant which must be considered in choosing a slope. Our orchard slopes north and in the winter of 1855 and 1856, the trees on the northern slope were all killed, while those on the southern slope remained uninjured, so you see it is not all slope.

MR. BRIGGS. This matter of setting fruit trees is important. The Northern Spy will do best on bottom land, but plant them on a high hill and they will suffer from many causes. We must study both the nature of the fruit and the nature of the soil and their adaptability to each other. When we know these points we can raise good fruit on all lands. The Baldwin is at home on hilly land. The King of Tompkins is not so well grown for profit on high land, unless provided with suitable protection, on account of its being a large apple and easily injured by the high winds. They are a profitable apple for us to raise in Maine and when we raise more than we want for our own consumption we are raising what some one else wants and will try. We know the King is fine grained and handsome, and if it is productive why not grow it. We want to grow what brings us the most money. We can produce apples on almost all soils in the State of Maine. I am not so familiar with pears, but I think they can be grown with profit. In Massachusetts they raise fine pears.

PRESIDENT POPE. Some soils are better adapted for certain varieties than others.

MR. TRUE of New Gloucester. Can you raise from two to four barrels of Baldwins where you can only raise one of Kings?

MR. BLOSSOM. Yes, I can raise many more. I cannot raise the King as I can the Baldwin. The King is handsome and can grow it anywhere. I have them growing in a moist soil and doing well. In fact, I don't know where I can't grow them.

MR. BRIGGS. I can raise good Russets. Mr. Ricker tells me that he would give most anything if he could raise Russets. We should study our locations and then we can find one suited to every variety of fruit.

MR. ATHERTON. What do you want Russets for when you can make more money out of Baldwins?

MR. BRIGGS. I would have the large bulk of my apples Baldwins, but I also want some other varieties. I do not like to eat one kind all the time.

MR. LELAND. For the last five or six years if my Russets had been Baldwins it would have made \$1000 difference with me each year. If I could get \$8 a barrel for Russets by keeping them, it would pay, but it will not now, as they are only worth a trifle more than Baldwins. There is not such a market for Russets as there used to be. I would give \$1000 if I could change my Russets to Baldwins.

MR. NELSON. In my soil Baldwins have been a success, and I can raise all varieties of apples except Bellflowers and Roxbury Russets. I would like to ask Mr. Whittier if he considers the Russets a worm gatherer? The Baldwin with me is quite free from worms.

MR. WHITTIER. Yes, sir, Russets may be more liable to be attacked by worms than the Baldwins, but I think not to any great extent. They are both worse than the Northern Spy and Bellflower.

MR. NELSON. What is your idea of the Hubbardston Nonsuch as an apple for profit and as one which is free from the ravages of the codlin moth, in comparison with our present standard varieties?

MR. WHITTIER. I have never raised enough of them to judge competently.

MR. NELSON. My experience is that the Hubbardston is free from the ravages of the codlin moth.

MR. LELAND. Mr. Blossom referred to the matter of drainage. How dry must the land be in order not to necessitate drainage? Will land on a side-hill with gentle slope which is sufficiently dry for tillage have to be drained for orcharding?

MR. BLOSSOM. It makes a difference in the situation of the land. The piece spoken of was formerly cultivated and sloped gently to the north with the trees sixteen by twenty-six feet apart. I have never drained much land that was dry. I don't know as I care how wet a piece is, if it is good strong land and I can drain it.

MR. ATHERTON. What kind of drain do you use?

MR. BLOSSOM. I build my own drains out of boards

MR. ATHERTON. Why not use a rock drain?

MR. BLOSSOM. Because a rock drain fills up so fast, and a board drain will last so much longer.

MR. BRIGGS. There is one point in relation to raising Russets. They must be carefully protected so they will not shrink and wrinkle.

MR. TRUE. At what distance apart do you set your trees?

Mr. WHITTIER. I consider this subject one of vast importance to orchardists. I would put them thirty-five or forty feet apart each way. A distance of twenty-five feet will do very well at first and until they commence to shade each other, when it will be foand insufficient. The apples will be small and poorly colored. The limbs will die and when cut off the trees will just that much lessen their supply of sap toward the ripening of the frnit. When set forty feet apart and well taken care of, the trees will grow the nearest to perfection. The lower limbs will grow well owing to their being well supplied with sunlight. An acre set in that way will give more sunlight and surface to the apple and tree than when only twenty-five feet apart, and will, therefore, produce much nicer fruit.

Mr. NELSON. My experience has been different. I would not set over-apart and I think I get the best results from trees set from twenty-two to twenty-five feet apart. The trees when forty feet apart are not neighbors; the wind will blow every leaf away, and you can keep no mulch around them. I have heard that trees set twenty feet apart would in twenty years give as good a money return as the same number of trees set forty feet apart. I have an orchard of sixty trees set twenty feet apart which came into bearing in 1856 and have borne immense crops of apples ever since. In 1871 I sold the apples raised in that orchard for \$410. That orchard will mulch itself and keep the ground mellow.

AFTERNOON SESSION.

After the meeting had been called to order by the President, Mr. S. R. Leland of Mt. Baldwin Farm, Farmington, was introduced, who read the following paper:

HOW I HAVE PROTECTED MY ORCHARD FROM THE RAVAGES OF MICE AND BORERS.

By S. R. LELAND.

I think pomologists agree that there are more fruit trees destroyed by mice and borers in Maine than by all other causes combined, and any methods that tend to prevent or even diminish the destruction of our orchards by these pests, from whatever source obtained, is perhaps worthy of a careful trial. In relating my experience in protecting trees from mice and borers, and the marked success I have met with, I by no means claim that the same methods would be followed by the same results in all soils and situations, particularly in relation to the borer. I shall be compelled to use the personal pronoun in this paper oftener than I like, for which you will please pardon me, as it is unavoidable in describing my own doings.

My orchard is situated on a ridge running north and south, and extends down to wet land to the west and through the easterly part of it is a narrow swale that drains a muck swamp lying in the N. E. corner of the orchard. These wet lands are just where mice delight to live. When I commenced setting trees the land was newly cleared, in grass, covered with decaying stumps, lots of stones, uneven, with knolls and hollows, and seemingly a more inviting home for mice could not exist. I commenced my orchard in the spring of 1869 by setting one hundred trees. In the spring of 1870 I set more and in the last week in October of the same years I set eighty-five trees, of which I lost nearly all. In 1871 and 72, I enlarged my orchard to three hundred and fifty trees. Up to this time I had done nothing to protect my trees from mice except an application of ashes once a year, as I will explain later on. The year 1872 was what is known in this section as the "sorrel year." My land, having been newly cleared, bore an immense crop of sorrel, with so little grass with it that I didn't esteem it worth

storing for fodder, so I mowed it and raked it around my trees, which gave them a bountiful mulching.

After doing that I became frightened for fear the sorrel might contain too much acid for the good of the trees, so wrote to the venerable S. L. Goodale, at that time Secretary of the Board of Agriculture, for his opinion. He answered that I need have no fears on account of the acid in the sorrel, but it would make a good harbor for mice next winter and I had better rake it away in the fall. Either from want of faith in Mr. Goodale's judgment or lack of time I failed to rake the sorrel away from my trees. The following winter there were more apple trees killed by mice in this vicinity than any other winter since I commenced setting my orchard. A neighbor had thirty-five trees in the spring of 1872, the sorrel year, near my orchard, and in the fall to protect them from mice had hauled out well rotted manure and heaped it around the trunks of his trees from 12 to 18 inches high. After there had been some thawing weather the next spring, and a funnel-shaped hole had thawed around the trunk of the trees, he came into my store one day and said that the mice had girdled every one of his trees, and inquired about mine. I had not been to my orchard since the fall, and you may imagine my feelings when I thought of the advice Mr. Goodale had given me. I hastened to my orchard and went over it. The snow had thawed around the body of most of the trees so I could see them to the ground or nearly so, and I found no work of mice.

After the snow was gone, I visited every tree and found, perhaps, half a dozen that had been barked a little but not a single tree materially injured. But the sorrel! Imagine a nest of straw on which a number of pigs have lain a long time and you have a good idea of the condition of that sorrel—thoroughly cut and fined up and almost innumerable nests in it made by mice. I have every reason to believe, and do believe, that the sorrel seed saved a large proportion of my three hundred and fifty beautiful young trees from destruction.

After looking the situation over leisurely and thoroughly, I seated myself on a boulder to reason, and came to the following conclusions:

First. That mice never eat the bark of an apple tree from preference but as a last resort to sustain life.

Second. If there is grain or seed of any kind within their reach sufficient to sustain life, they will never molest an apple tree.

Third. That I had got to winter more or less mice each winter and I could do it cheaper on grain than on apple trees. I have seen no

reason yet for changing the conclusions arrived at while seated on that boulder, and have acted accordingly.

Knowing mice prefer oats to any other grain, I have supplied *my* mice each fall with the amount my judgment told me would be sufficient to winter them, and that is the principal protection I have given my orchard. My method is to carry oats into the orchard late in the fall, take a bailed basket full on one arm and drop handfuls in the hollows and along the edge of the wet land alluded to above, and where the snow drifts on. A little observation in spring has shown me where the most mice winter and there I leave the most feed. I have used tarred sheathing paper around trees to a limited extent, but if mice are driven to the necessity of living on the bark, they will gnaw the tree above the paper. A little observation during the summer and fall will determine whether there are few mice or many, and I provide for them accordingly. When the mice are thick over winter I seldom see a pile of oats in spring not eaten. When there are but few they are not eaten so clean.

Now for the result of my method of protecting trees from mice. I have now about seven hundred trees. I commenced setting seventeen years ago and have set some every spring since I have probably lost in the time one hundred trees (losing eighty-five fall planted at one time), so I have set out eight hundred trees. In addition to this, I have sowed two nurseries in the time and within the limits of my orchard. The trees in the oldest one are all disposed of, and nearly all in the other. All the trees I have lost by mice in the orchard and nurseries in seventeen years can be numbered on the fingers and thumbs of my two hands. I think no one will doubt the efficiency of my method of protection, but the question of expense may be raised, and in anticipation of such an event I will answer in advance. It is not as expensive as paper or birch bark. The extra time required in putting on the bark or paper in the fall, and removing them in spring, will more than balance the cost of oats above that of the bark or paper.

Thousands of trees girdled by mice are given up as spoiled, that could be saved by timely care.

Visit the orchard often in early spring, and if trees are found gnawed, immediately apply mortar made of clay and horse manure, and wind with woolen cloth. Trees with the bark removed to the wood, treated in this way, before they have been exposed to wind and sun long enough to sear the wood, nine times in ten, will form a new bark and come out all right.

THE APPLE TREE BORER.

Saperda candida, Fabr.

Of this species of borer I have not much to say. In fact I don't know as I ought to find any fault with him as far as I am personally concerned, for he has never destroyed a tree for me.

I have learned by observation and enquiry that this species of the borer is much more destructive to orchards on light soil, or soil inclined to a sandy loam, than those on stony, rugged, loam land. My orchard is on the latter kind of soil and that, perhaps, is the reason this species of borer has not given me any trouble.

If any preventative I have used has *protected* my trees it is the application of ashes, for I have used no other.

Each spring after there have been a few thawing days and a tunnel-shaped hole thawed around the body of the trees I take the advantage of the snow crust and with a basket of ashes in one hand and a small scoop in the other I pass from tree to tree and throw a pint or such a matter directly around the trunk. If there is snow around the trunk, when it thaws the ashes follow down and more or less adhere to the bark. Equally as good a time to apply them is immediately after the snow is gone and when the trunk of the tree is wet. The ashes are visible on and around the trunk of the tree during the early part of the season when it is supposed the beetle deposits her eggs, and are particularly offensive to her. Ashes applied as above early in spring are also quite a protection against depredations by mice.

Another species of borer called the trunk borer is giving me more trouble. The first ten years of my orchard experience I hardly found a trunk borer, but the past five years I have had to wage war upon them continually. Their presence is easily detected by a slight discoloration and depression of the bark.

Alkaline washes have been highly recommended as a means of keeping away the beetle, but I have never practiced it. I carefully examine the younger portions of my trees, in which they work the most injury, once or twice during the summer and with a sharp knife remove all the affected bark and wood, if any, and apply a thin coating of grafting wax.

Many trees look, after I have been over them with the knife, as I imagine the rods of green poplar and hazel looked that Jacob piled, white streaks in them, and set in the gutters in the watering-troughs where Laban's flocks came to drink, but they will soon heal and come

out all right. Instead of cancer-like affections that are continually spreading broader and deeper, and over which nature has no healing power, we have smooth, fresh wounds which nature will hasten to heal.

TWENTY YEARS EXPERIENCE AND WHAT I HAVE LEARNED.

By WILLIAM P. ATHERTON.

From twenty years experience in the introduction and propagation of some of the newer varieties of apples, I have learned some things that could not have been learned, perhaps, in any other way than by experimental knowledge and which may serve as a safe guide to future operations in my own orchard if they are of no value to others.

THREE LESSONS.

First. Not to introduce into my orchard any new variety on a large scale until it has been thoroughly tested in a small way. This statement implies that the best descriptions and recommendations of the very best authorities upon the subject of fruit-culture should be taken with many grains of doubt, not as to their truthfulness or correctness in general, but only as applied to one's own individual case; and it implies, furthermore, that the testimony even of those in your own immediate neighborhood is not wholly reliable, because soil, if not situation, has as much influence upon the productiveness or non-productiveness of a fruit as climate itself.

As an illustration, take the King variety of apple. With my neighbor it has succeeded admirably, in growth, in hardiness and in productiveness; with me the tree has been perfectly hardy, the growth of wood slower than that of many other varieties and the production of fruit almost contemptible. My climate is the same as that of my neighbor's, the situation of my trees neither too exposed nor too sheltered, and I am, therefore, driven to the necessity of ascribing my want of success in producing fruit of this variety to difference in soil, and this more particularly, because I have taken the same pains in the matter of cultivation as with other varieties in my orchard. Perhaps some element, still, is lacking to make them fruitful, but alas! what is it? If a plenty of barn-yard dressing and an abundance of compost made up of muck, manure, ashes, lime and ground bones and applied as a top-dressing every two or three years has

failed, what then will avail? Will any of the commercial fertilizers in the market supply the needed want? Or, must I come to the conclusion that the variety is not suited to my kind of soil, and that, therefore, the variety must be changed? It is not a pleasant conclusion to come to after planting, cultivating and taking the best of care of a tree for ten years and when you expect, and it ought, to come into bearing, to have to coax, coddle and wheedle the same tree for ten long years more with no results worth mentioning.

In my orchard there are twenty trees of the above variety which vary in the setting from ten to twenty years and which have produced of fruit, in that time, comparatively nothing, and yet I have been advised by a good orchardist, who also is one of the largest fruit dealers in the State, to bear a little longer with this variety, as it is a good one. Other winter varieties, such as the Golden Russet of New York, the Poughkeepsie or English Russet and the Rambo or English Dominiie, which were introduced into my orchard quite extensively, have long ago been discarded, as also other varieties introduced in a more limited way, such as Walbridge and Cooper's Market for winter, Twenty Ounce, Colvert, Plum Cider, Grimes' Golden and Haas for late autumn; while for summer all my Duchess and Tetofsky trees have been reduced to one each, and my Red Astrachans will, next year, be reduced to two or three trees.

Second. In the laying out and planting of an orchard it is more economical and convenient, far more conducive to equanimity of temper, and, consequently, it will tend to greater longevity of life to have as simple an arrangement of the different varieties of apples as is possible or, in other words, to have each variety set by itself. I have learned the folly of having a complex orchard and it has been my desire and effort for the last few years to remedy this great defect which was due more to a want of forethought on the part of my predecessors than to indifference or carelessness on the part of myself. Sometimes varieties will not come true to name, sometimes tags get removed in transportation of young trees from the nursery, and sometimes varieties are misplaced in an orchard through the carelessness or the indifference of the graftor. Every orchardist is liable to such mistakes and no one can be too careful in guarding against them. In this case, as in all others, an ounce of prevention is worth a pound of cure.

Third. I have learned that no exact rules can be laid down either for pruning or training apple trees. In the training of a young

orchard something will depend upon location, upon the variety and habit of growth and whether the orchard is to be pastured to sheep or kept in tillage and mowing. In sheltered positions the trees can be trained very much lower than in exposed places where the wind has full power, as on the top of a hill. When sheep are kept in an orchard the trees will have to be trained higher than they otherwise would be on account of their propensity to browse and to pull out young scions; but even in orchards where no sheep have been kept I have learned that some varieties must be trained higher than what we would suppose when the trees are young. This is especially the case with the Yellow Bellflower and R. I. Greening. When these varieties are young and low-headed you will think it nice to train them so and it will be grand fun to stand on the ground and gather nearly all the fruit, but when they are older and the lower branches have extended far out and grown out of proportion to the head and the upper branches, when these same branches are heavily laden with fruit, and a large proportion of the fruit lies upon the ground and mildews, then you will not think it so nice.

PRUNING.

In regard to pruning an orchard, the best principle to be observed is to prune early, often and moderately. Some persons say that all the pruning which is necessary for a young and growing tree may be done with the thumb and forefinger. This is certainly a mistake. It might do in a garden plot or with but few trees, but with a thousand or more such a course is utterly out of the question. When buds will form shoots and grow from three to five feet in one season, they will need pretty constant and sharp watching in order to be removed with the thumb and finger. Moreover, as you cannot tell, always, the ultimate direction of a bud, it is necessary to leave it for a while and ere you know it, it has become a branch too strong for the thumb process and it will require the knife and saw. I used to think that June was the best month to prune young trees, but of late years I have changed my mind, having learned by experience that early spring—say the last of March and first of April—is the very best time. It is before the sap begins to flow much; there are no leaves to obstruct the sight; in a few days the cut will harden a little and when the sap does begin to flow, new wood will begin to form almost immediately and the wound will heal over quicker and better than at any other time of the year. This was the practice and experience

of the late Hon. Robert Hallowell Gardiner, one of the most zealous, enthusiastic and devoted pomologists in the State.

Having adopted his practice, I am free to say that I have been benefitted by his experience in this direction. Of course, rather than not prune at all, I would recommend to prune at any time when the saw and knife is sharp. Old trees that are full of suckers and dead branches had better be pruned in October or November rather than in the spring.

DISTANCE APART.

Twenty years or more of experience has not only strengthened my belief, but it has fully confirmed it, that thirty feet apart each way is none too far for most varieties, and especially for Baldwin, Roxbury Russet, R. I. Greening, Bellflower and Northern Spy.

DRAINAGE.

My experience has been that where there is not natural drainage sufficient, artificial drainage must be given, and that it always pays. In one portion of my orchard there is a plat of ground three-quarters of an acre in extent, which in years past has been thoroughly underdrained. To look at the land you would never think that once it was nothing but a morass or quagmire, where nothing but quack-grass, polly-pod and mares'-tails grew, but such was the case. Now, and for several years past, there has been growing upon it first-class grasses and heavy crops, and there is also a fine young orchard of Roxbury Russets and Yellow Bellflower apple trees. Yes, drainage, and especially underdraining, has paid me more than twenty per cent.

STORAGE AND PACKING OF FRUIT.

My practice has been to store in the cellar in barrels well headed up rather than in bulk, but were all my conditions right I might prefer to store in bulk. I have learned not to put apples in heaps in the orchard, never to carry them into a loft, for there they are sure to rot, and that it is better to carry fruit, if possible, directly into a cool, clean cellar and let them lie there undisturbed till packing and selling time, rather than into barns, sheds or open buildings where they are liable to be more or less bruised in a second handling, and where they are more likely to heat and sweat.

In packing apples we have always taken pains to have a uniformity of fruit throughout the barrel, consequently we have never had

any trouble in selling, having sold to one party alone for more than thirty years. It costs something to take pains in the packing of fruit, but carelessness or indifference will cost you more. When once a dealer finds that you have taken pains in packing and that you have put up your fruit honestly you will have no further trouble. In closing, allow me to say that no one can learn all about the fruit business in one year; it will take a life-time to learn many things essential to success, and then there will be something more to learn. But to him who perseveres all knowledge will gradually be unfolded, and with knowledge will come pleasure, if not complete happiness.

DISCUSSION.

Mr. SWEETSER. I would like to ask Mr. Atherton if he would recommend setting barrels of apples on the head, in preference to laying them on the bilge?

Mr. ATHERTON. My practice, after barrelling, is to put the barrels on the bilge, and keep them out of the cellar until the weather becomes quite cold.

Mr. MERRILL. I would like to understand if Mr. Atherton thinks that the barrelling of apples is a better practice than storing them in bulk. We all know that it is even temperature that keeps fruit in the best condition. He says in his cellar they keep well in barrels, but had they been stored in bulk I think they would have come out in just as good condition. Cold storage is good, but I don't agree with him in barrelling the fruit. In buying and barrelling apples for market, I have found the best apples in large lots in cool cellars. I buy from lots in large bins in preference to small lots, as my experience is that I get better apples.

Mr. ATHERTON. Did I understand that you wished me to give my opinion as to whether it was better to store in barrels than in bulk?

Mr. MERRILL. I presume you intended to give it as your opinion.

Mr. ATHERTON. I don't pretend to give any opinion. I simply give my experience.

Mr. BRIGGS. I presume that Mr. Atherton represented his experience.

Mr. MERRILL. I understand he is experimenting. He has apples stored both in barrels and in bulk. Now, if he has them stored both ways, and they come out in better condition in the barrels, I admit that I am wrong.

MR. ATHERTON. When they were put in in bulk I was away and had nothing to do with putting them up, and consequently could not regulate the temperature, which may have caused the difference in the way they came out.

MR. BRIGGS. There is one point in Mr. Atherton's paper which I should like to have explained a little better, and that is in relation to the cultivation of the orchard.

MR. ATHERTON. For the first few years I give it the best of cultivation, provided the young trees were uninjured by the means. Take the best land and prepare it well before setting out the trees.

MR. BRIGGS. Did you crop the orchard?

MR. ATHERTON. Yes, we cropped for several years. Had rotation of crops for about ten years.

MR. BRIGGS. What do you call rotation of crops?

MR. ATHERTON. By rotation of crops I mean plant corn one year, and beans the next, then potatoes and so on.

MR. BRIGGS. Did you ever sow grain in the orchard?

MR. ATHERTON. Not unless I intended seeding down to grass.

MR. BRIGGS. Would you then?

MR. ATHERTON. Yes, sir, and put on lots of manure and extra mulching. After you seed down apply top-dressing and mulch the young trees. If you fear any damage from mice, in the fall remove the mulch and bank up with earth, removing it again in the spring and putting around the mulch again. The last orchard I started was under cultivation three years. It has only been set eight years, and still has produced considerable fruit of the Nodhead, Swaar, Red Astrachan and other varieties.

MR. WHITTIER. I would like to hear from Mr. Gilbert.

MR. Z. A. GILBERT. I would like to add my testimony to Mr. Merrill's in relation to the storing of apples in bulk. I have handled one hundred and fifty barrels stored in bulk direct from the trees. I disagree with Mr. Atherton for two reasons. First, because it saves labor in handling and the damage to the fruit in handling it; and, second, I would store them directly in the cellar because it is best for the fruit. Apples should be placed in as cool a place as possible immediately after being taken from the tree, and hence the cellar is the best place for them. I sort very carefully in the orchard, always superintending the work myself, and always insisting that small and imperfect fruit shall be thrown away. The apples are picked in baskets and drawn to the cellar in bulk, and stored in bulk. In this

way I have put three hundred barrels in a large bin five feet deep running through the cellar, with a few left over that I put in barrels, with one end left open. The fruit in bulk came out last week in apparently perfect condition, bright and fair. If any apples had changed it was those on the top; those in the interior being perfect. This, I think, is the experience of apple growers in my own town. Last year they shipped in the cars 12,000 barrels besides those consumed in Lewiston and Auburn, nearly all of which were stored in bulk and taken immediately from the trees to the cellar. I wish to endorse one point in Mr. Leland's paper in relation to mulching. It has been my experience that mulching is a great protection to trees. I have heard arguments against it because it sheltered the mice. The mice are there but they are no more likely to girdle trees that are mulched than those that are not. If it has lain long enough to destroy the grass it is a good protection.

MR. ATHERTON. I wish to go on record right in relation to this matter of storing apples. It is my opinion that, on the whole, it is preferable to store apples in bulk rather than in barrels. I consider mulching a protection rather than otherwise.

MR. BRIGGS. I wish to say that I never lost but one tree on account of mice, and I never took extra precautions against their ravages. I mulch heavily and find a good many nests of mice but never lose trees.

MR. GILBERT. I would like to ask whether mulch is of value as regards its efficiency for apple production or not? I have never found it so. It is excellent for young trees to keep them healthy and thrifty, but I have found that mulch, such as hay and straw, does not take the place of manure.

PRESIDENT POPE. I don't know about that point, but if I had large trees and wished to put on a coat of dressing of any kind, I would also put on a good supply of mulch, and for this reason, in applying fertilizer it first strikes the grass and two-thirds of the benefit goes to the grass, but this application when spread under the tree and then covered with a mulch insures that the tree gets all the benefit.

MR. NELSON. Did I understand Mr. Gilbert to say that he did not believe in mulching?

MR. GILBERT. I had an orchard and spent twenty years in finding out that mulching will not take the place of manure.

MR. NELSON. Have you any trees along by the side of double walls?

MR. GILBERT. I have.

MR. NELSON. Don't you find them the best bearing trees?

MR. GILBERT. I can't say that I do.

MR. ATHERTON. I want to ask as to the respective value of grass as hay and mulch. Had I better mow the grass and let it lie in the orchard as mulch, or cure and feed it to stock and put manure in its place?

MR. GILBERT. That question can only be answered in a general way. Hay is not worth \$15.00 to mulch apple trees with. I would not recommend that course. I make some allowance for extreme statements. A little fertilizer applied often is the best for an orchard. The question of where we shall obtain fertilizers for the orchard is one which this Society should discuss at no distant day. I use ground bone and believe it to be good. Ashes are good, but they are scarce.

EVENING SESSION.

BUSINESS MEETING OF THE SOCIETY.

A business meeting of the Society was held at 6.30 o'clock, P. M., President Pope in the chair.

It was voted inexpedient to change the by-laws of the Society in regard to the fees of membership for annual members. The matter of holding the annual exhibition of 1887 was placed in the hands of the Executive Committee, and by them to be decided as they deemed best for the interest of the Society.

MR. T. M. Merrill of New Gloucester, from the committee to examine the fruit on exhibition, reported one of the largest displays ever made at a winter meeting of the Society, and presented the following list of exhibitors, with the number of varieties shown by each:

G. K. Staples, Temple, thirty varieties ; D. P. True, Leeds Centre, four varieties of pears, six of apples ; Wm. True, Farmington ; G. Hayes, Farmington ; Calvin Chamberlain, Foxcroft, one ; B. H. Ridley, Jay, twelve ; E. W. Merritt, Houlton, one ; Lorin Adams, East Wilton, three ; Phineas Whittier, Farmington Falls, twenty-three, and samples of six varieties of evaporated apple ; B. Titcomb, Farmington, eight ; S. M. Keep, Jay, nine ; George Good-

ridge, North Jay, nine; Emory Axtel, North Jay, two; Oliver Dunnell, Jay, four; A. J. Linscott, Jay, seven; Wm. Eustis, North Jay; S. H. Niles, North Jay, five; Alvan Currier, Farmington, four; S. R. Leland, Farmington, seven; D. H. Knowlton, Farmington, six; Mrs. D. M. Howe, Farmington, six varieties of apples, two of canned fruits; A. M. Goodrich, Industry; Harry P. Dill, Phillips, eight; Elbridge Dill, Phillips, seven; Ansel Dill, Phillips, three; Silas M. Wing, Phillips, three; M. C. Kelley, Phillips, seven; A. F. Hardy, Farmington, twelve; D. J. Briggs, South Turner, ten; Eugene E. Eaton, Farmington, seven; J. S. B. Hunter, Farmington, two; B. W. Brown, Wilton, ten; W. W. Rodbird, Jay, twenty-two; E. G. Blake, Farmington, eight; O. C. Nelson, New Gloucester, nine; S. R. Sweetser, Cumberland Centre, eighteen; L. H. Blossom, Turner, two; J. J. Towle, South Carthage, seven, and one sample of evaporated apple; J. Pope & Son, Manchester, fourteen.

Mr. W. P. Atherton, for the Committee on Nomenclature, presented a report. The committee recommended that the seedling apple exhibited by Mr. S. R. Leland be called the "Leland;" "Aunt Mary," a local apple forwarded by Mr. Calvin Chamberlain, of Foxcroft, was pronounced "fine for dessert;" and the "Aroostook Baldwin," forwarded by E. W. Merritt of Houlton, was mentioned as being hardy, and no doubt useful for that high locality, although wanting in qualities which would recommend it for other parts of the State.

Mr. D. H. Knowlton, for the committee appointed to consider the recommendations made by the President in his annual address, presented his report, viz:

Your committee to whom was referred the President's annual address beg leave to report as follows:

1st. The employment of experts to act as judges at our annual exhibitions is deserving of careful consideration by the Society, and though our present finances may not admit of the expense for a year or two, we believe the awarding of premiums would be more satisfactory to exhibitors.

2d. That this Society recommend the setting apart of a day to be known and observed as Arbor Day; and, furthermore, we recommend the passage of such a law by the present Maine Legislature as shall establish the same.

3d. Information reached us last night that the Hatch bill "to establish agricultural experiment stations in connection with the agricultural

tural colleges in the several States" has passed the Senate, and that the House committee has voted to report favorably upon the bill in that branch. We believe the fruit-growing interests of this State call for the passage of this bill, and we would assure our members of Congress that its passage would prove of great value to our State, and we would most respectfully urge them to use their influence to secure its passage.

4th. That in accordance with the recommendations of the address we would cordially invite all fruit-growers in the State to inform the Secretary of our Society from time to time of the condition of fruit, of the various diseases affecting it, the progress of the diseases, the causes of the same and any remedies which may prove efficient in treating the same.

Mr. W. P. Atherton then said:—

Mr. President: I hereby tender the following resolution, viz:

Resolved, That the thanks of this Society are extended to the people of Farmington and vicinity, for their cordial and hearty welcome; for their liberal hospitality; for the free use of their beautiful hall; for the fine display of their fruits; for the music which has contributed so much to the evening entertainments, and for their uniformly kind and courteous treatment of all our members.

This resolution was given a passage by a rising vote.

Votes of thanks were then passed to the managers of the Sandy River and Maine Central Railroad Companies, for the favor of half fare rates over their lines to all persons attending the meeting. But for the liberality of the railroads, the benefits of our meetings would be shared by comparatively few of those in our State interested in the work of the Society.

The business meeting was then adjourned, and after a brief intermission, the public session was called to order by President Pope.

PUBLIC SESSION.

The hall was crowded, this being the closing meeting of the convention. Prof. George C. Purington, Principal of the Northern Normal School, rendered a fine musical selection; after which Mrs. Hattie Park Keyes, the gifted wife of Capt. Charles W. Keyes of the Farmington *Chronicle*, read the following essay:

THE VALUE OF A KNOWLEDGE OF THE NATURAL SCIENCES
TO THE FARMER.

By Mrs. HATTIE PARK KEYES.

The subject is so broad and invites thought in so many different directions that, in a brief article like this, one can hope to follow but a few of the possible avenues of consideration, and these only for a little way. It may be trusted, however, that the candid and thoughtful minds of those to whom this topic is introduced may work out for themselves some ideas which, sooner or later, will be of some advantage; and I shall be, indeed, well pleased if calling attention to this matter at this time may, in any degree, assist in the way of greater enjoyment and a more remunerative income from a life on the farm.

One of the great problems studied in agricultural gatherings in Maine of late years is how to keep the boys—and it may be added girls, too—on the farm. The tendency has been so strong the past thirty years to leave the farm for the workshop or the store, or, what is as disastrous to the prosperity of our State, to leave the farms in Maine for a farm, a ranch or a miner's camp in the West, that the rural sections have suffered a serious decrease in population and, therewith, a great loss in the results of the labor which these runaway sons of the farm would have performed had they remained on or near the old homesteads. There is an old saying that times change and we must change with them. This is true in the relative attractions of farm and city life. In former times, when intercourse with the city was less easy and frequent than now, when the opportunities it offered to young people were far less varied and not so well known as at the present time, when the city streets possessed in much less degree

the glare and glamour which so delight and dazzle youthful eyes, the contrast in the inducements of the city and the country was not so marked as it appears now to be. If the city is all the time enhancing its claims to favor, the country must look to see what it can do to retain its hold on the affection and interest of the people. Is it doing this most necessary thing? The statistics of New England farming towns indicate that it has failed sadly in this respect. And yet the remedy is plain. Life on the farm must be made more satisfactory and enjoyable financially, aesthetically and socially. Granted that it ought to be, the next step brings us to the question, How can it be accomplished?

I fully believe the possession of a knowledge of the natural sciences by the farmers and the farmers' wives, their sons and daughters, will do not a little in increasing the profits and pleasures of their life on the farm, and for this reason I have gladly chosen this topic for my theme this evening.

The financial benefits which a knowledge of the natural sciences may give the farmer are so obvious that it would seem little, if anything, need be said on this part of the subject. It must be apparent to the most superficial thinker that he whose business is so closely connected with nature and whose income is so largely dependent on the cause and effect of natural principles should, of all men, be well acquainted with those principles, should know how far he must govern and direct them for his own advantage, when to look for exceptions and when to apply the rule ordinary results have established. The need of an acquaintance with the elements of the soil and the additions requisite to bring forth the most desirable and profitable crops is manifest to every one. The kinds of feed most nutritious and which can be most economically combined are subjects of great importance and if only *guessed* at are quite likely to be followed by lean stock and a lean purse in the pocket of a discouraged farmer. To know the right way to manage these things he should have a knowledge of agricultural chemistry. The kinds of insect and other animal life not gathered into barns are matters with which the farmer has constantly to deal. Which are his friends, which his enemies, he surely ought to know; what the nature of this, what the habits of that, are things he certainly needs understand. Here, an acquaintance with natural history will be of great assistance. The varied forms of plant life, the manner in which each species is reproduced, the benefits of some, the injury of others, a knowledge of botany will assist greatly to

determine. These and many other familiar but vaguely comprehended objects are governed by natural laws, and the earlier and the more thoroughly the farmer understands these laws the more successful he is likely to be.

Yes, you say, but doesn't the farmer learn all he need know of these things by experience and isn't experience, after all, the best teacher? Experience is a good teacher, but, you know, it has been said for many a year she keeps a dear school, and this we have found to our sorrow in all the walks of life. The lessons the farmer learns there are not only expensive but often they have to be repeated several times over before their meaning is heeded, and some, it seems, hardly learn their significance at all, but go on in the same old blundering way, laying the blame of their want of success at the door of bad luck or something other than the true cause of their ill fortune. Nor is this strange. The person who has not been trained to habits of observation and quick perception can hardly be expected to be anything else than a slow scholar even in learning the habits and nature of objects by which he is daily surrounded. While facts established and theories and opinions advanced by scientists are of great value to the farmer, a spirit of inquiry and an observing, attentive eye are likewise of inestimable worth to him who would have nature lend him the assistance she is always ready to give; and, to possess these qualities in their best estate, he really needs an early training. But as it is never too late to learn, it is better to begin late than not at all.

Again, it may be said, Do not the farmers have an opportunity to acquire all necessary information through the columns of the agricultural papers and the bulletins and reports of agricultural schools and experiment stations? There is an opportunity to learn much, very much, in this way, and I am truly thankful our State is so well favored as it is in this regard. I have felt sometimes the past few years as if such aids and the information and inspiration emanating from well conducted agricultural societies, present company not excepted, were the chief power which is preserving the life and vigor of many a farm in Maine. The reports of the Government Bureau, as well as of the State Board of Agriculture likewise, often contain much of value and their reading is to be commended. But, while I would do all I could to encourage the use of these and similar helps and believe that much may be gained thereby, the fact remains, and I think all present will agree, that much of the interest

in such articles is abated and much of the benefit is often lost because more or less of the terms used are not understood. Agricultural writers are sometimes blamed for employing phrases that the common people are not familiar with. I do not think there is just cause for censure. It seems to me that as a rule agricultural teachers make the endeavor to be plain and simple in their language, not to make a show of wisdom by talking in long words and foreign phrases, but simply to impart needed instruction. Yet there are difficulties in the way greater than would seem at first thought. There are many scientific subjects which cannot be treated at all without the use of more or less technical terms, and others where the use of common names in preference to scientific would lead to confusion and perhaps to serious errors. To illustrate: A writer might speak of chickweed and think there was not the least danger of being misunderstood, but to one person here in Maine this would mean one plant and to another another, while if he had lived in the Middle States very likely the name would stand with him for yet a third, for, in all, not less than eight species are called by this word. If, on the other hand, he says *Stellaria media*, we know exactly what he means, or if he speaks of *Cerastium viscosum*, there can be no mistake, for in botany one plant and one alone is given a certain name, while in common language the same name is often applied to several. These are familiar examples and errors in the case cited might be of little consequence, but the same confusion is likely to occur in matters of far greater importance.

We take it for granted that all candid ones will agree at once that some knowledge of chemistry would be an excellent thing for the farmer, that an acquaintance with the elements of natural history in its several departments might also be a convenience now and then, that some familiarity with physics and the allied sciences might likewise prove useful from time to time. Allowed that a knowledge of these sciences, if not absolutely essential to financial success in the business of agriculture, is, nevertheless, a good and desirable possession, the question now arises, is such an acquirement practicable, indeed, hardly possible, for the average farmer who is passing his youth or has already passed it with no other advantages than the district school affords? We admit that only ten years ago the effort would have been somewhat discouraging, but the case is different now: all the new attractions of life are not for city people; the country shares in some of the good things the last few years have

provided for favored Americans. One of these is that noble, beneficent institution, the Chautauquan, which, with its thousands upon thousands of students, is doing an inestimable amount of good work in promoting general intelligence and diffusing knowledge of literature, science and art in all places where the English tongue is spoken. Here is a means of acquiring knowledge which every farmer's family, if it has not already adopted, ought, at least, to be considering. I speak of this course first not because it makes a specialty of scientific branches or because it is designed especially for farmers but because it is such an excellent appetizer for all kinds of home study. There have been of late various excellent works arranged with particular reference to farmers' use. Among them the publications of Prof. Fernald formerly of the State College deserve a favorable mention.

The scientific works used in our schools of lower grade than the college will be found well adapted to the general reader. If not familiar with the titles or the place of sale of books on these subjects, a little inquiry will soon bring the desired information. Farmers' clubs have sometimes, among other good things, purchased more or less of a library; so also have local granges here and there. The practice ought to become universal with such organizations, and such libraries, if well selected, would have a due proportion of scientific works.

These are a few of the helps that may be looked to by those who, from reason of years or other causes, cannot enjoy the privileges of schools; but we hope the farmers' boys, who are going to be farmers themselves, may have the aid of competent instructors in introducing them to the pleasure and profit a knowledge of the natural sciences surely has in store for them. Happily even our common district schools are often found nowadays with instructors who can teach the elements of some of these branches and, by object lessons or other pleasant methods, educate—draw out—the mind in search for scientific truth. Better still when this early training is supplemented by attendance at some of the higher institutions. A full course at an agricultural college will prove, we believe, a good investment of time and money.

Before leaving this part of the subject I cannot refrain from saying that I hope the day is not far distant when the public schools of Maine will pay more attention to the study of the natural sciences. Thereby they would not only do much to increase the general intelligence but would confer a special benefit on agricultural interests,

directly by teaching laws and principles, and indirectly by training the perception and reasoning faculties for better service in the years of later life. A bill is now before the Legislature, I believe, which, if it becomes a law, will require public schools to give instruction in agricultural chemistry. So far, so good.

And now, since a happy life is made up of many things beside financial success, let us pass on to another phase of the subject and see how a knowledge of the natural sciences can aid in making farm life more agreeable in an aesthetic point of view.

There are people who love study for its inherent pleasures, and, if there were no pecuniary or social advantage likely to result, would still give more or less time to its pursuit. Joys which come in this line are of a high order, and will do much to make the possessor content in any place where his lot may be cast. While farm life has some obstacles in the way of such enjoyments, it still has much to aid and assist. Here we are brought near to nature, and, if heart be in harmony with her Maker and mind be trained to discern her marvelous beauties, we shall find an unfailing source of delight in the multitude of wonders on every hand. Rocks and trees, forest and garden, the earth beneath, the sky above, furnish an inexhaustible and ever fascinating field for study and recreation. But, as before, the question may be asked, how is this training to be obtained if we have not been so fortunate as to receive it in our younger days? Granted again that there are some difficulties, yet they are not insuperable. In the first place I beg the mothers to be governed by a little common sense. There seems to be no excuse in this late day for a woman to go into hysterics at the sight of a mouse, or turn a whole congregation into a panic stricken mob at the presence of a harmless June bug. A slight knowledge of natural history will teach her better, and this she can acquire with as little time and expense as it takes to read some novels, adding thereto just a moderate mental effort. Then such objects of aversion and terror will become matters of deep interest. It would be to her like the vision of beasts to Peter, teaching her that nothing the Lord has made is common or unclean. But the mischief of her ignorance and folly does not, unhappily, end with her own discomfiture. The children of the family catch the feeling and repeat over and over the same ridiculous experiences. Sometimes, alas, this feeling of aversion for living creatures is not taught indirectly but directly also, thus filling little breasts naturally loving and tender with contempt and hatred for things made like them of flesh and blood.

Under the caption "Seeds of Cruelty and Fear," the Christian Union a year or two ago published a story describing a scene the like of which, alas, we have all seen enacted time and again. I will make a brief extract, it is so *apropos*:

"Waiting in a public room in a hotel the other day, I saw a little incident which suggested to my mind the words at the head of this piece.

A little boy, perhaps three years old, a lovely child, ran into the room, followed by his nurse at a little distance. Crawling on the carpet in front of the fire was a large water-bug. The child caught sight of it at once and stopped to watch it. He showed no signs of either fear or aversion, only of interest and curiosity. The nurse, noting his intent gaze on the floor, hurried up and, seeing what he was looking at, exclaimed, 'Ugh, the horrid *thing*! Nasty! Nasty! Come away!' at the same time seizing him by the hand and attempting to draw him away. Her tones and gestures expressed fear as well as disgust. The child took the cue instantly; the expression of his face was transformed in the twinkling of an eye. He screamed, struck out with his fists, stamped his feet, all the time backing away from the poor, harmless little bug. A look of hatred deepened on his features, which one short moment before had been kindled with genuine childlike curiosity and pleasure.

At this moment the mother entered the room. Breaking away from the nurse, he ran to his mother, took her hand and drew her nearer the fire-place, still continuing his expressions of alarm and dislike, and pointing to the bug with his tiny fingers.

The mother echoed the nurse's exclamations of disgust and added, 'Charley, kill the old bug! Charley, kill it!' Upon which, the nurse taking the little fellow's other hand, the two women led him to the bug, he all the while half holding back, half fascinated with the excitement of the attack. They led him closer, the mother repeating, 'Yes, Charley, kill the old bug; it shan't bite Charley;' until, at last, lifting his small foot, the child crushed the bug to death, and then jumped up and down on it with chuckles of delight, saying, in his broken baby talk, 'Bug dead! Bug dead!'"

The writer goes on to say:

"I looked on, speechless with indignation, sorrow and shame. The mother was a person apparently of intelligence and refinement. Her face was a more than usually attractive one. Her dress and

bearing were those of a woman of the world. The servant was evidently of a higher grade than the average nursery maid. And yet this was the thing they had done in that one short moment to that little child: taught him to fear, hate, torture and kill helpless creatures."

It is needless to say that by indulging such feelings as those exhibited in the scene described, the country is shorn of much of its attraction for mother and children. On the other hand, teeming as it is for a large part of the year with countless varieties of animal and vegetable life, those who know even a little of botany or natural history will find there ample entertainment and instruction. To them the days will not be void or dull or monotonous. In the words of Coleridge, they can say:

"He prayeth best who loveth best
All things both great and small
For the dear Lord who loveth us
He made and loveth all."

We have all enjoyed the charming descriptions of natural scenery penned by the gifted "H. H." That the common, humbler forms of plants and animals were as dear to her as the grand, inspiring scenery of the Rockies there can be no doubt. Hear how she describes what she would have for her last, long home:

"Do not adorn with costly shrub or tree
Or flower, the little grave which shelters me;
Let the wildwood seeds spring up unharmed
And back and forth all summer unalarmed
Let all the tiny, busy creatures creep."

I would fully endorse all that has been said on the cultivation of flowers at home. I would also urge an acquaintance with our native specimens. I have often been surprised and sometimes almost grieved that ladies who devote considerable time to the care of imported plants should appear so indifferent to those of native growth, and yet the real beauty of many such is unsurpassed. No cultivated oxalis I have ever seen can equal the exquisite delicacy of the *Oxalis acetosella* of our Maine forests. Scores of others beautiful and wonderful might be mentioned, but time forbids. There seems of late to be a better sentiment in this respect so that the aster, the golden rod and one or two others have taken their true position in public favor.

While it is to be deplored that so many have lived unmindful of the opportunities for happiness and improvement life on a farm af-

fords, yet it is pleasant to know some have not overlooked them. Especially happy are the children of those families where father and mother or older brothers and sisters have taught them to open their eyes and behold the wonderful and beautiful things all about them. Children are apt pupils in such things and only need a trifle of encouragement and guidance to do very good work as amateur naturalists. I knew a little miss who, long before she could speak distinctly, could tell the names of a goodly number of minerals. A little boy in this town with slight assistance from a judicious mother had made and classified quite a collection of native plants when he was only five or six years of age. I do not believe that boy or that girl when they grow up will *despise a farm*. It may be that all parents are not so well prepared to aid their little ones in these researches as those I have in mind, but all can, at least, give courteous answers and not chill the ardor of young minds seeking after knowledge. Sometimes, I am sorry to say, parents not knowing how to answer the question directly give instead an impatient reply like "don't bother" or some other phrase intended to check further inquiry. Children thus brought up can hardly be expected to take an interest in the old farm. Sooner or later they will be seeking for entertainment and pleasure in some more genial atmosphere.

Lastly comes the question, What can natural sciences do to make farm life more satisfactory in a social way? I would answer, much in various respects. A few of these have been already referred to.

As companionship lends an indescribable charm to study, so, reciprocally, study gives to companionship some of its sweetest joys. A grange or farmers' club whose members are studying the natural sciences will find their organization not only more profitable but far more enjoyable also. And since the grange recognizes the principle of equal rights, the sisters, ever active in preparing good things for the palate, will not be debarred from partaking this rich and wholesome mental food. Securing a competent instructor to give a course of lectures in the winter season would be a wise expenditure, and, as in the matter of books, the outlay falling on so many would not be burdensome.

The pleasures of the neighborhood can be greatly increased by the spread of interest in study. Diamonds cut diamonds, and minds having some store of information cause each other to give out their best thoughts, putting to flight petty jealousies, heart burnings and idle gossip. Might not any community be better by the change?

To speak more in detail, young and old can unite together in a Chautauquan Circle or can enjoy the inexpensive luxury of a circulating library. In summer and autumn geological or botanical picnics may be made a delightful variation from the every-day toil. In winter, if the more abstruse departments of astronomy seem too formidable, a company of country people can pass some of their evenings very pleasantly in learning the geography of the heavens, an enjoyment their city cousins well may envy. The chief pleasure of companionship in study will, however, be found in the family when parents and children are alike interested in something more than their daily round of labor. Young hearts are nearest, perhaps, to the great heart of nature, and their childlike enthusiasm will do much to inspire their more weary fathers and mothers. The great benefit, too, of their early introduction to scientific truth will repay their parents for any little sacrifice of time and trouble. The child who is early taught to investigate the truths of the natural world has the double advantage of a great gain in time and, better still, of possessing perceptions well trained from the start.

In conclusion, a knowledge of the natural sciences is of great value to the farmer in making his business successful, his home pleasant, his life happy. This knowledge is most easily and readily acquired by early training at home and in the town school, supplemented by some months or years at one of the higher institutions of learning; but those who have not had these advantages need not, on that account, be discouraged; those who go to it in the right spirit will find a very excellent seminary in the old chimney corner. Mothers and sisters need this knowledge as well as the fathers and brothers. They need it to conduct the household on hygienic principles, to lead the youthful members of the family in the way of usefulness, to give to home and neighborhood life the agreeable and elevating atmosphere it ought to have.

Have the public schools and the agricultural societies done what they ought to do to promote so good a cause? They have done something, but the opportunity has not been fully taken yet. The field is so promising and the results so desirable, they surely warrant a decided effort. We wish the Dirigo State might take a leading step in this direction.

At the conclusion of Mrs. Keyes' essay, Mr. C. A. Mace of Readfield was introduced, who read the following poem.

THE OLD AND THE NEW.

BY C. A. MACE.

The average farmer we have oft been told
Was not a fruit grower in the days of old.
His flocks that roamed the country far and wide;
His herds that greeted him at eventide;
His fields of grain soft waving in the breeze
Filling the air with pleasing melodies,
He loved far more than planted vine or tree,
For these gave quick returns for industry.
And if by chance a fruit tree should be found
So venturesome to occupy his ground,
'Twas there by accident not by design
And yielded fruit fit only for his swine.
Thus years roll on and added to his store;
His earthly goods increased yet more and more.
An honest, kind, hard toiling man was he
And noted far for his integrity.
His home, perchance, may be a mansion grand
On lofty hill, the fairest in the land;
Or yet, perhaps, some cottage by the way,
Around whose walls the soft winds gently play;
And yet no restful shade, whose sheltering arms
Lend to his home its most inviting charms;
No fruitful vines or sweetly scented flowers
Adorn his grounds and cheer his weary hours;
Beauty, with no encouragement to stay
Has spread her wings and silent flown away—
While stern necessity in plain attire,
His only counsel round the evening fire.

The good wife wends her weary, ceaseless way
Through constant, tiresome duties day by day—
Yearning for all that's beautiful and good;
Starving in fact, for need of mental food.
Children, as they grow older, are possessed
With ardent longing and vague unrest,
And soon 'mid other scenes they hope to find
Employment more congenial to their mind.

Pomona and Flora, two sisters fair and gay,
Left their mystic home so far away,
Each laden with their choicest gifts to man,
And their work of love through earth began.
They visited the lowly in their humble home

As well as those to whom great wealth had come.
Pomona there her richest fruits displayed,
Before them, too, her choicest gifts arrayed.
She pointed them to sacred gardens old,
Whose ample fruitage rivaled purest gold—
The source of all she brought to them this day,—
And whose rich tints reflects pure Eden's ray.
This gift was not intended for display;
Its benefit all can enjoy who may.
For the Creator ever had designed
This fruitage for the good of all mankind.
Thus as she proved 'twas not the way to live
To spurn the gifts that nature has to give,
But man should seek to know and understand
The laws that form this good work of His hand.
Forthwith she taught him all her secret art,
A love for all God's works did she impart,
Till man comes forth from this one interview
With ardent hopes and aspirations new.

Meanwhile fair Flora does not idly stand,
But scatters treasures thick on either hand.
Their fragrance fills the humble farmer's home;
Their beauty calls forth praise from every one.
Her mission is to open to our eyes,
The world of beauty that around us lies;
To show to us that God has not designed
His noblest work no rest from toil shall find,
But ceaseless wend his constant, weary way
Through irksome duties, with no cheerful ray
To smile on him and soften daily care,
And fill his life with pleasures rich and rare.
Sweet comforter, a noble mission thine!
To cheer our weary eyes, our thoughts refine.
Thy offerings of purity and love
God's goodness to his toiling children prove.
Although her labors to in-doors pertain
Her form is seen o'er all the farm's domain.
Fair messengers spring sweetly from the ground,
By wayside brook, in forests deep are found,
Reminding us of our Creator's love,
And pointing us to our fair home above.
Yet Flora's presence brings more joy and peace
To weary house-wives in their brief release
From weary toil, who eager seek to find
Some recreation to divert their mind.
To such fair Flora is a cherished friend
As arm in arm through shaded walks they wend

Their way, while on the toiler's weary brow
Sweet rest and peace we find are resting now.
The young are sure to find in Flora a glad friend;
For youth and purity most happy are to blend.
She comes to them a messenger of love;
And future life will full of beauty prove.

As time moves on with its resistless tide,
A change is seen along the country-side.
The husbandman no longer, as of yore,
To flocks alone looks for increase of store.
Although his herds and fields of waving grain
Their proper rank in the year's round maintain,
New occupations of congenial kind
Now interest and occupy his mind.
The lone fruit-tree that in the corner stands
No longer suffers from neglectful hands,
But, pruned and fertilized, it yearly pours
Into his lap its most abundant stores.
We look around; upon the hill-side steep
And meadows broad, with soil both rich and deep,
Are planted fruit trees of the choicest kind,
Whose slender branches waving in the wind,
Bear fruit that in the beauty of rich colors vie
With brightest rainbow tints in summer sky.
We wander now within the garden's bound
Wherein fruitage of choicer kind is found.
Here shrub and plant and every useful vine
To add unto his treasures rich combine,
And pleasure, health, and recreation rare
Are found in training slender tendrils there.

As we approach the farmer's lovely home,
Into a world of beauty we have come.
For flowers reflecting Eden's purest rays
On every hand meet our enraptured gaze,
And looking upward to the heavens above
Teach us the lessons of purity and love.
And now the cheerful voice of song is heard
As sweet and clear as song of woodland bird,
When showers of spring come floating on the breeze
Or summer's sun makes glad their melodies.
This home a type of others in our land
We enter at the housewife's kind command.
The matron's brow may show some signs of care,
And marks of toil perchance are resting there,
Yet by the love that shines forth from her eye
We know her heart is filled with melody.

Intelligence now guides her toiling hand
And drudgery departs at her command,
While pleasant recreation for the mind
And restful pleasures she can ever find.
The house plants that are every lady's pride
In tasteful order ranged on every side,
While luscious fruitage of a goodly hoard
In great profusion decks the farmer's board.
The children of this modern household fair
With their surroundings happily compare.
Reared amid such influences bright
They fill their home with happiness and light.
You hear no longing for more distant scenes,
And they dread not the time that intervenes
Ere they shall leave their childhood's happy home
In other lands, 'mid other scenes to roam.
Home is to them the dearest spot on earth
And sad the day they leave its sacred hearth.

I've held to-night no picture to your view,
And told no tale that one may call untrue.
I look far back upon the page of time;
I see some noble men in manhood's prime
Forming a band of earnest brotherhood,
Working together for the common good.
And soon societies all o'er the land
Originate from this the parent band.
Fruit culture now an impetus receives
And rich returns to thoughtful minds it gives,
While many a name to-day ennobled stands
For choice production by his skillful hands.
I see long trains of loaded ears to-day
Bearing the fruit of your old trees away
To cities, where huge transports waiting lie
To take the products of your industry;
Thence waited by stern winter's icy breeze
They reach the homes that lie beyond the seas.
I look around upon the grand display
Of apples fair this cold, mid-winter's day,
Bright hue, fair form and tempting as of old,
When Eve's desire to taste was not controlled.
I ask whence cometh this bright, fair array.
The gentle goddess, whose name you bear to-day,
Who hovers ever near with noiseless wings
An answer to our eager question brings:
"It is my work to guide the inquiring mind;
For in my kingdom precious gems you find.

They are but samples of my varied store,
And richer gifts await those who explore."

Again, I turn to scenes of long ago,
A company are battling winter's snow;
Cold and bleak their home on Plymouth shore
Within the sound of the Atlantic's roar.
No outward beauty now adorns their lives
Save only that which stern religion gives.
The spring-time flowers awake no tender thrill,
And slight the joys that in their life instil.

Now this is changed; along your village streets
Many a fair picture now my vision greets.
The changeful lamplight in the evening hours
Shines brightly through a foliage of flowers.
The windows bar the winter's icy chill;
Within is summer sweetness reigning still,
That robs the monarch, ever stern and cold,
Of half his terrors, and breaks his icy hold,
And man now resting from his laboring hours
With ever grateful heart, thanks God for flowers.

In olden days, the Latin term for home
Was an abode, a dwelling place alone.
It might be in the country fair and wide,
Or in the town, washed by the river's tide.
A cave or tent upon the hillside bare;
Or if in town, perhaps a cottage fair.
Where'er a family lodged was called its home.
And thus a sacredness around this spot did come,
For old English laws hold, even to this day,
Man's home his castle is, both strong and gray;
That none may enter there unless he gives consent,
For civil process, or for their own intent.
Our dear word home, round which a halo lies,
Is from the Saxon; and it signifies
An object sacred, and covered from the eyes;
A quiet and retirement, likewise the term implies.
In sunny France this prevalent idea
Is not so prominent as with us here.
Not much of true home life the Parisian enjoys;
The city's gayeties his time and mind employs.
In restaurants, he eats his food with zest;
In lodging rooms, he seeks his needed rest.
In classic days few people owned a home.
A million souls once walked the streets of Rome.
Of this vast number we are truly told
Only two thousand their homes controlled.

In later days we look to English laws;
In Erin's isle we see the wrong they cause.
Where land is owned but by the titled few
Distress is prevalent and riots brew.
In our idea of home the interest lies
In that one owns the home he occupies.
'Tis this that gives each toiler in the land
Courage to labor with an honest hand;
Incites him on in every enterprise.
Wherein success and an improvement lies;
While this one thought his hours of labor cheers,
The benefit will come in later years.
His home may be a humble cabin now
On fertile plain or on the hillside brow;
With trusting faith he cultivates his lands
And plants his fruit trees with industrious hands;
Improvement marks his steps where'er he goes,
And all waste places blossom as the rose.
The cabin low, abode of toil and care,
Gives way at last for stately mansion fair,
While soft winds sing among his fruit trees near,
Which pour their offerings grateful year by year,
And flowers their precious perfume freely shed
And fall in showers of sweetness on his head.

There's many a home in our fair land to-day
Such as I have endeavored to portray.
And if I ask, where in our country's bound
Can peace and satisfaction true be found,
You will not turn alone to learning's walls,
Nor yet to pleasure's gaily lighted halls;
Nor will you seek 'mid riches' dazzling glare
For perfect peace and happiness most rare,
But, turning to our humble farmer's home
Reposing sweetly neath high heaven's dome,
You say—this is a life that pleasure gives,
Happy is he who 'mid such beauty lives.

There's many an influence that unbidden comes
From silent objects that adorn our homes.
A lady once lamented even with tears
To one—a playmate of her childhood's years—
That as her boys approached maturity
They had an ardent longing for the sea.
She could not understand the cause, she said,
That they should thus desire to earn their bread.
A beauteous picture hangs within their view,
A noble ship, speeding the waters blue.

The friend then pointed to the picture rare,
Hanging these years in all its beauty there;
"That painting fair an inspiration gives,
And this has influenced your dear boys' lives."

Fathers, plant trees, and interest your boy
In a pursuit that will increase his joy.
Each fruit tree planted by his youthful hand
Binds him more firmly to his native land.
Fitting companion you will ever find
The thrifty fruit tree for the youthful mind,
And lessons true unconscious day by day
They ope to them in their impressive way—
While being trained to stand erect and strong
And pruned of errors that will lead them wrong,
Engrafted with the fruit we know is pure
That to the end shall prosper and endure.
Such occupation to the young mind gives
A virtue that lasts ever while he lives,
And in the coming years will prove to be
A source of pride and noble legacy.

Nations afar reach forth an eager hand
For choice production of our sunny land;
And we shall find an ever open door
For all the surplus of our choicest store;
For England's fog we know can never vie
With the productions 'neath our sunny sky.

Some years ago I saw the refining power
Exerted o'er the young by blooming flower.
I chanced while in a city's busy street,
A group of young and noisy girls to meet,
Ill clad, uncouth, they proved themselves to be
Examples of a low humanity.
Gazing into their face you could not say,
You saw of virtue one redeeming ray.
At last they paused, by mutual consent,
And in low tones gave to their wonder vent.

'Twas then I saw upon the sidewalk there
A lot of potted plants of beauty rare,
Exposed for sale amid the passing throng,
And shedding fragrance as they rushed along.
These children from the homes of want and care
Unconscious gazed upon the picture fair,
While on their faces clouded by unholy blight
There shone, it seemed to me, redeeming light,
As they beheld the silent beauties there

And caught their perfume in the summer air.
And then I thought each being He has made—
In whatsoever guise they are arrayed—
Some portion of divine love are possessed,
And His sweet flowers can make it manifest.

Our homes to-day may be like gardens fair
With nought that is unlovely growing there;
Or yet perhaps they tarnished are, by sin
With weeds of error ever creeping in.
Let us, dear friends, exert the utmost care
That nothing ever thrive that is not pure and fair.
So when the Master walks in cool of day
We need not fear and hide ourselves away.

Mothers, how oft you've trained the household vine
That gracefully about your homes entwines—
How oft in gardens fair the beauteous rose
More sweet and lovely by your guidance grows;
And lilies fair in all their purity
Grow fairer still beneath your watchful eye.
And yet in these fair homes of yours to-day—
When you may turn from outside scenes away—
And when those little arms in tenderness
Cling round your neck with their sweet child caress,
A rose, more sweeter far than earthly garden flower,
A lily, fairer than e'er those in Eden's bower,
This earnest, toiling life work beautifies,
And makes your home an earthly paradise.
May you have grace to guide with loving care,
Until they bloom in Heavenly gardens fair.

This exercise closed the evening's programme, and the annual winter meeting; although for a half hour afterward most of the audience remained in the hall and spent the time in social intercourse. All pronounced the meeting a very successful one, the several papers and discussions having contributed largely to promote the objects, and help carry forward the work of the Society.

ORIGINAL PAPERS.

Three of the papers given in this division were prepared for the winter meeting, and announced in the Programme. But as it was impossible for their authors to be present, they were simply read by title, and are here published in full. It is manifestly unjust to a person to have his essay read by another in his absence, when such paper contains opinions, statements or experiences which the writer is not present to explain or support, should his ideas draw out a discussion, as is usually the case. This has occurred once or twice at previous meetings of the Society, and it has seemed unfair to the Secretary to bring such essays as a target for criticism, in the absence of the writer. He has therefore deemed it best to take them from the order in the Programme in which they stood, and present them in the form here given. The other papers were especially prepared for the Society, one of which was intended to be read at the Farmington meeting, was addressed to the Secretary at that place, but did not reach him until after the close of the meeting. All the papers are not only interesting, but valuable ; and some of them are important contributions to the local history of fruit growing in our State, especially as regards varieties for particular sections. The thanks of the Society are due the several writers for their contributions.

ORIGINAL PAPERS.

A CHAPTER OF REMINISCENCES.

By CALVIN CHAMBERLAIN.

As the time of the winter meeting of the Pomological Society approaches, we who cannot be with you physically can very properly extend to you the assurance of being with you in spirit. I fear Piscataquis will not be represented at your meeting in any other way. While you are preparing for that event, I have nothing to send through you that now presents a special claim,—perhaps nothing that might not as well or better be omitted. But I am rather inclined to send you a box of apples if I can seasonably see a favorable break in this Arctic weather. I have ever hesitated long before deciding to call general attention to a new variety of fruit, as we are always heavily loaded with such claims.

I have a fair apple of medium size, green in color, a native in an orchard in this town, that I helped my father set, beginning about the year 1820, and adding thereto in the few succeeding years. My attention was first directed to this apple by the circumstance that a business man at Milo came to me at harvest-time in several successive years for a load of apples. After he had become acquainted with the orchard, at each visit he looked first at a particular tree, and if it had produced, his load was largely made up from that. From this hint I put some in the cellar for winter trial. About that time, my wife was transplanted from the county of Worcester to Piscataquis; and one of the small comforts that helped to make the removal tolerable was the finding this apple better suited to her taste than any she had before met. The children of our relatives and neighbors soon introduced a household phrase—“Aunt Mary’s tree,” “Aunt Mary’s apple.” I speak of what was passing forty years ago. Since then, I have many times presented a dish of apples mixed—

Nodhead, Fameuse, Hubbardston and others well known,—with the “Aunt Mary,” and on trial the preference is very generally given in favor of the last named. Its fine, tender, juicy flesh is peculiarly refreshing, and appears specially agreeable to persons of weak digestion; for which real or fancied merit it presents a claim for further trial. It retains its sprightly qualities remarkably long; usually extended to one-third of the year. The tree forms a round, thick head, rather drooping, requiring care in thinning. Branches slender but strongly set, so as to carry safely its enormous crop which comes in alternate years. If thought worthy of place, please call it “Mary” or “Aunt Mary.”

I will send you a sweet apple from an old tree of my own growing, which I suppose to be grafted, but cannot say how I obtained it. Perhaps some one may recognize it. The tree is a good bearer, fruit always fair; larger than Talman, more juicy, better when baked, and keeps as well.

The market for Piscataquis apples has recently been opened a little by a trading firm at this village taking them in exchange for goods, and they have handled two car-loads or more, paying \$1.00 per barrel delivered at the store; they transferring to their own barrels. These have been taken from a few cellars within easy distance of the village. This party came to my cellar for a few barrels of Talman to fill an order. My other market, and the one to my taste quite as satisfactory, is in the daily ration that goes to the faithful old horse, the pet Jerseys, and the quiet pig. When I was first planting trees, my thoughts sometimes found expression through the types of the old *Maine Farmer*, to the point of crowning our hill-tops with sweet apple trees to an extent to fill the market and leave a possible surplus for our domestic animals. I have since taken satisfaction in that my practice was then made to run so nearly in accord with theory.

While we are together we may properly indulge a little in a brief retrospect of the interest we represent, and especially *now*, from the circumstance of the recent removal of our good and great leader and teacher, Marshall P. Wilder.

The first attempt to promote the interest of fruit culture in this country through a general, comprehensive organization appears to have been made in the year 1848. There was at that time a large number of local organizations active in the good work. The management of the State Agricultural Society of New York in that year caused a meeting of delegates at Buffalo from fifteen States and the

Canadas. That convention resolved itself into a permanent organization with the name of "North American Pomological Convention," and the first meeting held under that title was at Syracuse in 1849.

Another movement of analogous character was made the same year (1848) by a meeting of fruit growers at New York City, which meeting organized itself into a permanent association under the title of the "American Congress of Fruit Growers." These two organizations were subsequently amicably merged in one, with the name of the "American Pomological Society."

I was at the meeting in Syracuse in 1849,—went there as a silent pupil, representing only myself. None other there from Maine. I there met for the first time many active workers whose names are well preserved, whose works have been approved, and the most of whom have now closed their record. The assembly was mostly made up of citizens of New York,—a small delegation from other States and Canada—more from the West than from the East or South. From the workers of whom I retain the clearest recollection of person, manner and matter presented, I will name J. A. Kennicott, C. Downing, P. Barry, C. M. Hovey, David Thomas, J. J. Thomas, L. F. Allen and J. J. Mapes. Dr. Kennicott was a young, active enthusiast in the orchard interest of Illinois, and was chosen president of the convention. Mr. Mapes was then publishing an agricultural paper at New York City. Mr. Hovey was publishing a magazine at Boston, devoted mainly to horticulture. Mr. Barry then, as now, located at Rochester, New York, was engaged in one of the most extensive nurseries in this or any other country. Mr. Mapes also had a nursery in New Jersey, and Mr. Hovey one at Brighton, Massachusetts. It was not convenient for me to attend the meetings of the consolidated society until 1856 at Rochester. I there met my young friend, John W. Adams, then conducting a nursery of a few acres at Westbrook. We were there as the sole, self-appointed delegates from Maine.

I have attended none of the meetings of that organization since, except one held at Boston. From the many citizens of our State whose names I can easiest recall as my associates and teachers in this special interest, are those of Holmes, Benson, Foster, Fairbanks, Sears, Little, Noyes, Carr, Weston, Rogers, Adams. I do not repeat for the purpose of saving them from oblivion, for these with many others will be retained while the industrial literature of the age shall exist.

Of the men with a wide-world reputation, active in the earlier years to which I refer, with whom I can claim some personal acquaintance, I can name none now remaining in the world but P. Barry, J. J. Thomas and our own S. L. Goodale. Of our great and good teachers, Charles Downing and Marshall P. Wilder, I would on this occasion give you words expressive of my appreciation of their individual characters and their acquittal of assumed obligations in life's mission, but my impulse is checked by inability to express a tythe of what I feel. Their contributions to the well-being of the race are rarely, if ever, excelled in individual endeavor at any era in man's history. Each in a life well extended through careful compliance with physical laws—each in early life devoted to a special pursuit of vast importance to mankind—each lived to accomplish that for which we, with a united humanity, will hold them in perpetual remembrance. It was my privilege to receive favors from their hands; and no gentleman was more prompt and painstaking in private correspondence than they were. It was once naively remarked of Mr. Wilder that “wherever he steps, flowers bloom around him; and whenever we meet him, his hands are full of richest fruits”

In and through their unselfish works in disseminating life-giving fruits, these model men builded wisely and well their homes, and planted their choicest fruits in that *real and perfect world*—separated only by a vail from this—where they may enjoy without limit, where blight and insect pest may never enter. We miss them here, and where will be found those worthy to take their places?

Foxcroft.

FRUITS IN AROOSTOOK COUNTY.

By E. W. MERRITT.

As I attempt to write on fruit culture in Aroostook County I feel my incompetency, although one might suppose that nine years ought to acquaint me with the facts; but please bear in mind, the county is large, the soil varies greatly and conditions which are favorable in one locality are detrimental in another; also different treatment is required on these diverse soils and localities, and while we may start at the southern boundary of the county (which is seventy-five miles north of the fruit-growing belt) with a list of thirty-five varieties of apples, it rapidly diminishes as we proceed north. In order that you may better understand this, I will say that the catalogues of Massachusetts embrace some three hundred and fifty varieties of the choicest apples, which is only a small part of all grown, our friend Bennoch at Orono has one hundred and forty, while at Houlton not more than twenty can be successfully raised, and the list will run down to four or five kinds at Fort Fairfield and Caribou. There may be an occasional place in this county where the number may be slightly increased.

SOILS.

In this county there are (according to Colby's Atlas) one hundred and seventy-five sections of about six miles square. Fifty of these are settled, twenty-five more partially settled, and the remaining one hundred have but few, if any, settlers. The principal settlements are on the east side of the county and embrace a comparatively narrow strip running north and south for a distance of one hundred and twelve miles, Houlton being thirty-four miles north of the south line. By this you will see I am able to speak of only this small portion of our county. This area is cut still smaller by the fact that low, frosty ground, also land where there is a loose subsoil and intervals, are not adapted to orcharding. Yet, in spite of this, a large portion of the southern part of the county is as good orchard ground as any part of the State (aside from the fact that we are restricted to a few of the choicest varieties).

In most of the clay and slate, and all of the granite soils, apple trees will flourish and become a profitable orchard with the proper care and protection. Orcharding is yet in its infancy, although a great

outlay and effort has been made, which has been but a partial success owing to these causes :

1st. A want of care and judgment in selecting hardy varieties, the buyer not knowing what to buy and the agent not understanding his business.

2d. A want of care and protection from cattle, mice, caterpillars, etc.

3d. Trees raised in New York are not so good as those raised here, for, the soil being alluvial and light, it makes the growth light and spongy ; the soil is deep, allowing the roots to run so deep that a large part of the roots have to be cut off in raising the tree when shipped ; and then, again, it is too great a change in climate, and the tree cannot be depended upon to make a healthy orchard.

Those who have orchards of grafted fruit find it a very profitable investment, and there will soon be apples enough raised in this vicinity to supply the home demand. A large number of choice varieties are set out here each year, as the apples raised here are of superior flavor and will keep longer than when raised south of here. I think that eventually apples will be shipped from this county ; they may not go to England, for we have a great country north of us which will always want them. Every one that has an orchard in bearing is well pleased and wishes he had more trees. What I wish to emphasize is that orcharding is a success in this part of Aroostook and will be more so as the people learn to take better care of their trees. These conditions, however, cease at forty-five miles north of the south limit of the county, which is at Bridgewater. It is no use for any one to think of raising an orchard above this line except of a few early and fall apples and these only in isolated localities. This may seem strange, yet it is a settled fact in my mind, for the following reasons : 1st, In parts of Blaine and Mars Hill the soil is four feet deep ; 2d, The subsoil has an excess of lime, resting on a rotting lime ledge ; 3d, The snow comes on before the ground freezes and being a light, loose, warm soil, the trees start early in the spring and are killed by late freezing. These conditions reach as far as Fort Fairfield, where the subsoil is fine gravel. If these hindrances did not exist the climate is now too cold for orcharding.

Some of the above difficulties may be partially remedied on young trees by treading the first snows about them, allowing the ground to freeze, but this is not practicable in a large orchard or around large trees. If the above alleged facts be true we are led to conclude that

most of the southern third of the county is well adapted to orcharding, while north of that it cannot be made a success.

NURSERIES.

The nursery business has been repeatedly tried here and as repeatedly failed. Out of seven, five have been closed or abandoned. One nursery of sixteen thousand trees set out in the spring of 1887 has been able to raise not more than one out of ten to what might be called a tree, and probably not half of these can be made salable. The last one of thirty-two thousand trees set in the southern portion of the county lost one-third of their trees the first winter. Young and tender trees and extreme cold, coupled with other difficulties too numerous to mention, make the losses too heavy for an inexperienced person. It costs twice as much to raise a tree here as in New York, it grows slower, looks scrubby and has not their glossy appearance; but being raised on a hard, granite soil they are well supplied with roots and a solid, firm wood. Mr. Sharp of Woodstock, N. B., is the only one in this vicinity who has been able to surmount these difficulties, and his success has been attended with considerable loss.

SMALL FRUITS.

Please bear with me when I make the seemingly extravagant statement that there is no place on the face of the earth better adapted to small fruit culture than Aroostook County. The soil is good, while the climate could not be better. Here is their home. My nursery consists partly of cambrian, slate and alluvial soils, and the fruits seemingly do equally well on each. The snow comes on before it is cold enough to do any harm and keeps the bushes and vines housed all winter; preventing all freezing, thawing and heaving of the soil. When the snow has gone in spring it is warm and they will start forth with all their vigor, not having lost any of their strength by repeated attempts to start before it was safe to do so. Any tree or bush exposed to the cold of our winters and the drying wind and sun of March sustains no inconsiderable loss, hence the benefit of snow. Our most serious obstacle in gooseberry and currant culture is the currant worm, which will strip a currant bush as quick here as anywhere. A limited home market is also a hindrance.

Gooseberries make a strong, healthy growth. From seven hundred and fifty Houghtons set out in the spring of 1885 we gathered ninety pecks this past summer, some bushes yielding as high as two

quarts. I consider two thousand pecks a moderate yield per acre for this variety. I sold most of mine at \$1 per peck, and they will pay well at half this price, but the demand is limited unless they can in some way be preserved for winter use at a moderate cost.

Currants. With currants as well as gooseberries there is no hot sun here to curl the leaves, stint the growth, and injure the fruit; most of the shoots making a growth of from two to three feet each in one season. I think there are fortunes for those who may engage in currant culture, making them into jelly for the outside market. The most of mine are the Red Cherry variety, yet I think I shall hereafter set mostly Fay's Prolific and White Grape.

Strawberries are a good crop here and may be held back in the spring, making the fruit late, ripening after the wild ones here are gone and outside markets bare, when I think they can be shipped at a profit. I have the Bidwell, Jumbo, Finch, Piper, Daniel Boone, Sharpless and Manchester, which have all done well, none winter-killed; the last two named varieties take the lead.

Raspberries are right at home here, and, there being so many wild ones, I have as yet done but little with this fruit. The Herstine and Crimson Beauty are perfectly hardy, and have stood up during the winter uninjured.

Blackberries have received but little attention: I do not know of a blackberry hardy enough to stand up during the winter.

I have in my experimental grounds Smith's Improved gooseberry; Victoria and Fay's Prolific currants; Parry, Jewell and Belmont strawberry; Gregg, Cuthbert, Marlboro' and Golden Thornless raspberries; Agawam, Wilson, Jr., Staymen's Early and Snyder blackberry; and all of the above have done well so far but have not been thoroughly tested yet. I intend to add, the coming spring, Russian mulberry, apricot and pear with some choice varieties of apples and small fruits. My nursery being nearly one hundred miles further north than any other in the United States, I have been able to profit but little from the experience of others. The modes of treatment used to advantage by those farther south are not safe here. Should any one of this Society have a choice fruit and wish to have its hardiness tested, if they will send it to me in the spring it shall receive my personal attention.

Houlton.

SOME ASPECTS OF FRUIT CULTURE IN SAGADAHOC COUNTY.

By J. W. LANG.

Sagadahoc County lies in the southern and consequently the best fruit belt of the State. It has its territory pierced by the lower Kennebec, with its branches of Sasanoa and Back rivers forming the island towns of Arrowsic and Georgetown; and its south is bounded by the Androscoggin River near its confluence with the Kennebec, through the medium of Merry-Meeting Bay. Its geography is further diversified physically by the Abagadassett, the Cathance and the Muddy rivers, all flowing into the great common water of Merry-Meeting Bay. It will thus be seen that we have considerable climatic modification and conditions dependent upon and caused by influence of these waters. One of these conditions is a considerable humidity. The county borders upon the ocean, and ocean waters, in the towns of Woolwich, Arrowsic, Georgetown, Phipsbury, Bath and West Bath.

The apple is particularly at home on our rocky ridges and lighter clay loams. There is considerable gravel loam and the heavier sands, where orcharding thrives quite well. Being so easy of access by water this county was early settled, and many of its towns have now already celebrated their centennials. The early settlers planted seeds of the apple about their dwellings, and there are many vestiges of these first orchards. The generations succeeding also planted orchards, and these, before the art of grafting became known and practiced by the people, while they bore abundant crops from the strong and unreduced soil, were in many instances fit for little else than feed or cider, and were mostly used for the latter. The best were used for food, but for time out of mind great quantities of cider have been annually made, and this has had its influence on the temperance question of the section.

The younger or later orchards are of improved fruit; but enough of old natural trees are left to supply several cider mills in nearly every town with a good fall's work, and enough cider is made to keep a great many of the boys and young men in the downward road, that for too many of them can end but in a drunkard's grave. The product of cider is far greater than any demand of market, or promise of profit for working into vinegar. The writer conceives

that he has done some effective work the past season for the temperance reform by cutting down and clearing up a large number of these old "naturals" that were beyond the redemption of the graft, and yet too tenacious of vitality to die of their own accord, and which annually persisted in bearing their annual crops of gnarly apples not worth picking for feeding to stock or swine. These trees were near old cellars and cumbering the best of soil, showing they were planted about the early farm-houses of this section.

More care is taken in planting out trees than formerly. The ground, as a rule, receives a previous preparation, and the trees are carefully selected and carefully handled and planted. They are usually well managed by manuring and cultivating the land between the rows, and if on sward ground they are kept well mulched.

The borers with us are on the increase, and require vigilant looking after twice a year at least. Bark lice are far too common, and the caterpillar and web-worm more or less troublesome every year. There are many other drawbacks, so the life of the apple man and the fruit grower is not one of an all intense delight. On the other hand, good care, careful attention and judicious cultivation are duly rewarded.

There is more attention given than formerly to pears and small fruits each year. There is no rapid growth or marked excitement, but a slow, careful, increasing attention. One of the lecturers at our Farmers' Institute next week will treat of strawberries; another of raspberries and blackberries, and we venture to say of their remarks that they will be listened to closely and their teachings carefully treasured up in earnest and interested hearts, and in years succeeding their good points will be woven into practice. These two lecturers are practical men in the subjects they speak about—the one from Knox, and the other from Waldo counties.

There is a tendency to grow more winter apples. Our local markets are over-stocked with early fall, fall and late fall apples. There is also a tendency to grow a better supply of greater variety of fruits for home use, and home sale—for supply of the raiser's table, and that of the village and city resident. There is more studying up the subject, consulting the reports of this Society, and interest in the fruit exhibits at our fairs. It is found that the Maine-grown strawberry always brings a good price, as most of the crop comes after the western supply is stale or out of the market. Our Maine berries, fresh from the vines, must always bring a fair—even large

price, and who dare imagine when there ever will be an over-production of good strawberries and cream?

The gooseberry and currant are two of our neglected yet highly meritorious small fruits. Since learning how easily they may be met and fought with a two gallon sprinkler and a teaspoonful of white hellebore stirred in the sprinkler full of water, there can be no good reason why their cultivation will not increase. While Maine may never grow grapes for market, there is no reason why every farmer and every villager may not raise an abundant supply for their own use.

The cherry of the "Black-Heart" variety is as easily grown and as hardy as the wild cherry of our waste lands. They are easily and rapidly grown from seed, come into bearing in a few years, and the child always closely resembles the parent. The trees live to a great age, and continue bearing annual crops generation after generation. The Rev. Charles A. Cone brought the "Black-Hearts" into this vicinity, from the Vaughan estate at Hallowell, years ago, and has some splendid trees, and there are also some grand trees on a place here where he formerly lived. Others incited by his precept and example have raised and are raising fine trees. The "Black-Heart" grafts kindly into the wild cherry, and forms a very good tree if grafted in the limbs.

Altogether the present condition and future prospect of fruit culture in Sagadahoc is encouraging. Each bearing year larger quantities of winter apples are called for and sold out of its borders, and car load after car load is loaded at our stations and shipped to England, some of which doubtless find their way to the Queen's table, by the way of Queenstown.

Bowdoinham.

ORCHARDING IN SOMERSET COUNTY.

By FRANK E. NOWELL.

Has the Maine State Pomological Society given any force to fruit-raising in our county? I think it has, for in travelling over Somerset County we see signs of marked improvement in fruit growing during the last twelve years, not only improving and caring for old orchards, but also in the planting of young trees. You can see fine fruit in the southern half of the county of both fall and winter varieties. This is in part, I claim, due to the advanced markets, and in part to influence of the Pomological Society, although there are not as many members as there should be in the county, still I am glad to say its reports are read by the firesides of many of our orchardists, and the future will show that its recommendations are silently working an influence for good. It is a fact there is a decided improvement in growing apples for profit in this county. You will find orchards set out of our native stock where the tops have been properly grafted, are yielding good, paying crops. One great trouble is, we see too many varieties in small orchards, and generally too much fall fruit, for profit. Another misfortune is in having two and three varieties on one tree. This should be avoided. A chief objection is, it makes a great trouble and extra work at gathering time.

I believe in Maine-grown trees for Maine orchards. You can buy trees to-day that are grown in native nurseries at less price than the Western trees can be bought for, and it is my idea they are far superior for the cold hillsides of central and northern Maine. Another thing. In buying Western trees of agents one is apt to get duped sometimes. To illustrate: Four years ago one of my neighbors bought seventy-five western trees from an agent. The varieties bought, as he supposed, were Baldwin, Russet, Talman Sweet and Nod-head. I helped him set them out in checks twenty-four feet apart. They looked first-rate and grew well, as they all lived. Of course he was much pleased with his trees. Well, the next year ten of them bore apples of the crab variety. The second year more crabs appeared and the third year they *all* bloomed with crabs. So much for buying fruit trees of travelling men recommending stock from firms we have never heard of. This, I grant, is an exceptional case, for I have had some experience with western trees in the last twenty-

years, and am willing to admit I have some good trees of the hardy varieties, such as Northern Spy, Talman Sweet, Rhode Island Greening and Yellow Bellflower; but at the same time I have set native trees in the place of the lost westerners and top-grafted them, and to-day they are bearing more apples than the western trees in the same row. So I will repeat again, I believe in Maine stock from Maine orchards.

The shipment of apples to Europe is quite a business, and evidently a growing one. That the foreign demand for shipping varieties of Maine apples has increased at a rapid rate in the past few years we can all testify. Why is it so? In my view it is because of their fine flavor and good keeping qualities, if carefully picked and packed. Some have said apples should be handled like eggs; I don't think they are quite so tender, still, they need very careful handling to put them in the market in good shape, so as to receive the high prices we all like to obtain for our fruit.

Somerset County so far has been noted more for its sheep and fine wool than for fruit. Still, it has taken some part in our annual State shows in the past, and I think it could have done better, had the orchardists fully understood the pomological merits; but we hope as the years roll by to see a greater advancement in fruit culture—for our old sheep pastures on the rocky hillsides make fine places to set our native trees and graft them to Baldwins. And just here let me say a word as to the importance of setting out orchards at once. Do not wait until everything else is done, and for the convenient time as you think, for on a farm there is always something to be done. One of my townsmen, over twenty years ago, thought when he had a leisure time he would set out an orchard, but that time never came and the consequence is, he only raises a few apples from some old trees that were on the farm when he took possession of it. I know from experience it takes both care and time to look after trees and keep them in order; but it pays every way to do so. And my advice is, take the time now and set out trees. They will grow while you are doing your other work, and in a short time you will feel well repaid for your time and trouble by the fine returns which the trees will make.

Now, in regard to the different kinds of fruit, I will give you a list of nine varieties for home use, lasting the entire year: Red Astrachan, High-Top Sweet, Winthrop Greening, Nodhead, Tompkins' King, Talman Sweet, Baldwin and Northern Spy. I find these give good satisfaction in my section. Of course people have different

ideas about fruits. Some think the Spy a better apple than the Baldwin, but to my mind the Baldwin is still chief of the winter market, although the Spy is a fine apple. Some object to them on account of being slow bearers; however, it is proving a profitable apple on high ground for Somerset County.

I cannot say much in regard to pears in this county, as they are rather hard to raise. I have noticed that where they do succeed in raising them it is on a rather dry subsoil on slaty ground. I have some trees that have been set out for twenty years and they have never borne twenty good pears in that time. The Flemish Beauty cracks badly with me, while a neighbor of mine raises very fine ones, as his soil is different from mine.

We hear but little said about plum trees in this county, yet they are easily grown, and I think it would be safe for me to say the fruit is a favorite with every one. I have noticed in riding over the county horse-plum trees in clumps in door-yards and orchards. They can be easily grafted to Washington, McLaughlin or any of the Gage family. They are all good. Last fall I sold Red Gage at \$3.20 per bushel, and if a large amount had been at my command could have sold them all. Later I learned parties sent to Boston for them and paid \$4.00 per bushel; so it is evident plums can be grown in Somerset County at paying prices. All it needs is a little care and enterprise to grow them anywhere in the old "Pine Tree State."

Fairfield.

WHAT SHALL WE DO TO INCREASE THE PROFITS OF FRUIT CULTURE IN MAINE?

By HENRY A. SPRAGUE.

I can think of only two ways to do this: First, to grow more or better fruit; and, second, to get a better price for our fruit.

To raise more and better fruit would not increase our profits, unless the increase be raised at a cost which will leave a margin for profit; but if we can secure a large increase both in the quantity and quality of our fruit without any additional expense, an increase of our profits will evidently follow.

And this I think we can do, if we will. A large proportion of our fruit is either destroyed or injured by insects. There probably are no insects in the world which are not preyed upon by bird, beast, reptile or insect enemies; and where human agency has not interfered to destroy the balance between the different classes, insect injuries are few. To take away the cause—or possibly to assist nature, in some instances, to restore equilibrium—is all we can do, and will in most cases be sufficient. What we farmers should do is to come to the front, as our leaders in the grange tell us, and assert our rights and demand greater protection for our purely insectivorous birds and other animals. The grange has been successful in some of its demands on the Legislature; why should it not in this?

In regard to the price of fruit, what can we do to make that any better? Nothing, unless the grange helps us, but through that we should demand as much import duty on Canadian apples as the Canadian Government charges us, when our trees yield a better crop than those of the Dominion.

And now, perhaps a few notes on the progress of fruit culture in this county will be of interest to some. All varieties of apples and pears at present under cultivation wintered safely, and would have produced a fair crop of apples but for the extreme dry season of 1886, which reduced the apples in size very much. A few pear trees produced a little fruit, making it appear probable that when full bearing age arrives pears may be a profitable crop in this county. Four Shaffer raspberries, all I had of that variety, wintered perfectly without protection, while two Nemaha growing beside them were practically destroyed. From my limited experience with the Shaffer,

I think it will prove a valuable fruit for this section. Its fruit is not as rich as Brinckle's Orange, but is good and in size surpasses Dolittle, Ohio, Nemaha and Cuthbert. In flavor and color it stands intermediate between the blacks and the reds. Fruit of all kinds produced a light crop this year, but the fruit crop was better than most other crops, as it seems to withstand dry weather better.

The cranberry crop in this section was almost entirely destroyed by early frosts. I should have said that over a hundred young Shaffer raspberry plants raised from the four which I bought in the spring of 1885 all wintered beside their parents without loss, and without winter protection. I have just read President Pope's address of last winter, and would like to ask whether the apples which were sold for five dollars per barrel were those of our common varieties, or some rare, fancy apple sold for ornament rather than use ; and how many such apples could be sold at such a price ?

With regard to the discussion on short-jointed trees, I would say that about twenty years ago I bought scions labeled Drap d' Or which had buds closer than usual, and none of the scions lived long enough to produce any fruit ; and I now have a variety (Early Colton) which have the buds nearer than any other variety which I have seen. It has not fruited with me yet, and is not perfectly hardy.

In regard to some of the varieties of apples in the last publication of the Society's list, marked (?) for the Central Division, and the varieties of which my experience has led me to regard them differently from the description given, I would say :

Fall Jenneting has not yet fruited with me. Moses L. Damon of South Charlotte speaks highly of it, but says it is only a biennial bearer.

Foundling. My experience is very limited, but I think it is hardy when grafted in limbs. but not always so when grafted on young stocks.

Gravenstein. The scions which I obtained under this name were grafted in young trees, and all winter-killed or became black hearted and died without producing a single specimen of fruit.

King of Tompkins County. About twenty years ago I set eleven trees of this variety, produced by splice-grafting young seedlings with scions obtained of Calvin Goddard of Portland. The trees made a rapid growth, and every fall promised an abundant crop of apples for next season ; but the buds always winter-killed, and the wood was more or less discolored. I succeeded in getting perhaps

a dozen very nice apples in all. Some of the trees died; but I grafted most of them to other varieties to save their lives.

King Sweeting. I obtained scions under the name of High-Top Sweet, but by description of the late Joseph Taylor they are King Sweeting. A nice apple, but the trees are often injured in winter.

Large Yellow Bough. Nice when fully ripe, but a thin bearer and not as early as some other apples.

Porter. Scions obtained of C. Goddard for Fameuse produced some nice fruit, which appeared to be Porter. The trees were very tender. A neighbor also had some Porters which killed badly.

Primate. Very nice, but too tender for profit.

William's Favorite. Very nice and fruit buds not so likely to kill as those of the Primate, but bearing trees sometimes wholly kill.

Charlotte, Wushington County.

LETTER FROM HON. HENRY E. VAN DEMAN.

MR. SAMUEL L. BOARDMAN,

Secretary Maine State Pomological Society.

My Dear Sir: I have this day the honor to acknowledge the receipt of the programme of your Society at Farmington, next week. It would be a great pleasure to me to be present on that occasion, but as I have only to-day returned from an official trip which has taken two weeks of my time, you can easily imagine the work now awaiting my attention. But it is in my mind to meet with you at some future time. Let me assure you of the interest that Commissioner Colman and myself have in the prosperity of your Society, and the culture of fruits in your State.

As the Pomological Division has but just been started, let us hope that it may be made a means of assisting the fruit growers of Maine in more successfully and intelligently pursuing their work, and let us work hand-in-hand to that end. If you see any way in which this Division can aid you, do not be backward in calling on me.

Yours Fraternally,

H. E. VAN DEMAN,

Chief of Division of Pomology.

U. S. DEPARTMENT OF AGRICULTURE,

DIVISION OF POMOLOGY,

Washington, D. C., Jan. 29, 1887.

PROPAGATION AND CULTURE OF THE PLUM.

By J. E. BENNOCH.

Plums for the past few years have not, in my section of the State, been on the increase, but rather sadly on the decline; and I think, with the exception of some few localities, it has been very generally so. With me the fruit has been scarce for the past few years, but previous to that I have usually raised fine crops of this fruit.

My experience with plums—which has been extended over quite a period of years—shows that after a certain age they become shy bearers, owing, no doubt, to the fact that they have performed the offices of their nature and are no longer useful. On the whole the plum tree is of short life, especially on the plum stock, or on its own roots. The trees also show decay very rapidly. I find my best plum trees are upon the pomegranate stock or roots. I also find that I gather larger and fairer crops and of larger fruit in most if not quite all cases, and that the tree is also of longer life. What plum orchards I call to mind at present are from the Woodstock, N. B., nurseries and I am very sure their roots are the pomegranate. One very bad fault with the pomegranate is that it throws up large quantities of suckers from its roots, which I have noticed is not entirely so with stocks raised from the stone-seed but generally so with suckers that have been apart from roots; and these sucker very badly and at long distance from the mother tree. My last grafting and setting of trees are strictly from seed growth, and in fact all grafting of whatever sort or variety of tree growth should be from seed growth and on such.

The best soil for the plum is that of a clay nature, and to insure good crops the strongest and best manures should be used. Dressing from the hog-pen and poultry houses is the best that can be used; also a yearly ration of salt must not be forgotten. Poultry and pigs should be detailed as policemen in the plum orchard to arrest the grower's enemy and the plum destroyer, the little monster curulio. The pig and the poultry will leave none to tell the tale the next year; and in cases where there are no plum orchards in close proximity, one year, or rather one season's work they will not show up, for three or four years, to do but little harm. I think as a general thing plum trees are not so well understood as are other

fruit trees. I am of the opinion that plum trees need and should have an annual fall top-pruning, the same as the pear for instance, I think in the month of October. What is meant by top-pruning is the cutting or nipping back of the present year's growth to from two to six buds all through the tree, which tends to strengthen and develop the fruit buds, while in a year of heavy growth of wood the buds would not develop, as in many cases fall pruning lessens wood growth and develops fruit growth. Where a tree is backward in wood growth, and it is wanted, cut back from the terminal bud in the spring, and if the ground is in fair condition you are quite sure to get it.

I have known some plum trees to be quite a number of years developing their fruit buds, and making also but very little wood that is of strong growth, but rather short and quite plenty; when, if this growth had been nipped back and about one-half of such growth spoken of had been entirely cut out of the two years' wood, I think the tree would have set a crop of plums the next year.

To meet with success in plum raising the trees should be set in orchards by themselves. In this case they can be cared for more easily and with less trouble than by being grown here and there with other fruit trees. In starting stocks for the plum I should use pomegranate stone-seed stock to graft upon and graft on the collar for the plum. In the pursuit of new varieties I should use plum seed, and it is the only way for experimental purposes. The stock for grafting upon should be worked at two years' old growth; the next year from the pip the stock should be nipped back so as to give a strong growth on the collar for purposes of grafting. This should be done from the last of June to August. Seed for testing purposes should be from large, fine varieties, such as McLaughlin, Smith's Orleans, Washington, Coe's Golden Drop, Duane's Purple, and other good varieties; the large fruit of the plum in all cases bring the best prices.

Plum trees as a general thing are quite hardy, until old age arrives with them, and then their infirmities only end with their death. When they begin to show signs of feebleness it is time to replace with younger and more vigorous trees. Of the fine and valuable varieties there are many to select from—those above mentioned being among the best. There are some diseases peculiar to the plum tree, such as black knot, oozing of what is called gum, which last shows the tree to be in a diseased condition of the stock. Black

knot has not, I believe, been fully defined as yet; the only remedy I know is to cut off the affected branches and burn them; and I think it is the only safe cure. One thing that the plum demands with good care and dressing is its most favorite natural soil, clay, to insure good crops and bring the longest life and health to the tree. Why I have said this much about the plum is because it is a fruit of so much value and character, and so little has been written about it that I wanted to bring it to your consideration, that it might take its place as equal to other fruits of our State; for we all know the fruit of the plum is much sought after and in numerous localities can not be had at any price.

Orono, Penobscot County.

FRUIT CULTURE IN PISCATAQUIS COUNTY.

Letter from MR. H. L. LELAND.

MR. SAMUEL L. BOARDMAN,

Sec'y of Maine State Pomological Society.

My Dear Sir: I am sincerely obliged to you for the invitation to be present and take part at the winter meeting of the Pomological Society to be held at Farmington. It would give me much pleasure to meet friends who, like myself, are interested in fruit growing. I must, however, deny myself that pleasure, although realizing that much might at that meeting be learned that I feel myself very much in need to know.

Of the present condition and future outlook of fruit growing in Piscataquis County there is not much to be said that would be of general interest to those outside the limits of the county. Our farmers have not generally shown any special interest in fruit growing beyond the planting out of trees that the persistent western tree vender has cajoled them (too often through misrepresentations as to merits of new varieties) into giving orders for. It has too often been stated to need repeating that as a rule western fruit trees are a failure in Piscataquis County. Exception can be made of several of the extremely hardy varieties among which are the Duchess of Oldenburgh, and of more recent introduction the Haas and Wealthy. While the tree venders are pushing these varieties and other iron clad our villagers and to a considerable extent farm orchards are

being filled with these to the exclusion of other well-proven and much more desirable varieties.

The old, well-known desirable varieties that succeed perfectly in Piscataquis County are the same as those in the central counties of the State, except the Baldwin which in Piscataquis matures only into a fair cooking apple. Our present needs in fruit production are:

(1). Properly grown home grown nursery stock would be in the line of economy and an assurance to the purchasers of future success.

(2). Our people need to learn that a tree is a living thing, and like all other living things demands attention.

(3). We need more knowledge of varieties adapted to our climatic conditions and such as are called for in the markets.

(4). We propagate far too many varieties. Our agricultural societies encourage this error by offering premiums for the largest number of varieties shown by exhibitors.

Finally we need just that sort of practical knowledge which it is the province of the Maine State Pomological Society to disseminate.

Thanking you for copy of Transactions of the Society for 1885, I remain,

Yours Fraternally,

H. L. LELAND.

EAST SANGERVILLE, Jan. 24, 1887.

LETTER FROM MR. PATRICK BARRY,

President of Western New York Horticultural Society.

MR. SAMUEL L. BOARDMAN,

Secretary Maine State Pomological Society.

Dear Sir: I have just received copy of Transactions of the Maine State Pomological Society for 1885, for which accept my thanks. You have made up an excellent volume. Success to you!

Respectfully,

P. BARRY.

ROCHESTER, N. Y., Feb. 15, 1887.

LETTER FROM MR. W. S. DEVOL,

Secretary Columbus Horticultural Society.

MR. SAMUEL L. BOARDMAN,

Secretary Maine State Pomological Society.

Dear Sir: I have received your reports, and from a hasty perusal of them I think you must be doing much good in Maine. The catalogue and descriptions of fruits are valuable above the most of such. I hope in this time of reviving interest in horticulture, with a Division of Pomology in the Department of Agriculture, &c., that you may have still greater prosperity.

Yours Truly,

W. S. DEVOL,

Secretary.

COLUMBUS, OHIO, May 24, 1887.

SELECTED PAPERS.

The sketch of Hon. Marshall P. Wilder, late President of the American Pomological Society, given herewith, has been made up from an obituary which appeared in the Boston *Journal*, from a memorial in the report of the Michigan Horticultural Society, and from the funeral discourse of Rev. Edward N. Packard. The dates have been carefully collated with records, and are believed to be correct. Following this a few extracts are made from reports and transactions of kindred societies to our own, on subjects of interest to Maine fruit growers, florists and horticulturists.



Marshall P. Wilder

SELECTED PAPERS.

MARSHALL PINCKNEY WILDER.

1798-1886.

“The man of all others whom the pomologists of America respected, admired and loved.” These are the words of Hon. Charles W. Garfield, Secretary of the American Pomological Society, in announcing the death of Col. Marshall P. Wilder, which occurred at his home in Dorchester, Mass., on the morning of Thursday, December 16, 1886. “One of the most noted men in the science of pomology of the present century,” is the language of Mr. S. D. Hillman, Secretary of the Minnesota State Horticultural Society. Similar expressions have been made by the officials of every horticultural and pomological society in the country, and by the press generally, especially by the agricultural and gardening journals. It seems eminently fitting that we should preserve upon the pages of our Transactions some memorial of Col. Wilder’s life and services; and, accordingly, the following sketch is published. It has been chosen from several sources, all of which are believed to be trustworthy, although we have deemed it best to omit many details pertaining to his political and business career, and to give prominence to that which pertains to his love for and devotion to pomology and horticulture.

The death of Hon. Marshall Pinckney Wilder occurred at his home in Dorchester, Thursday morning, December 16, 1886. Mr. Wilder was at the breakfast table as usual, and died about half-past nine o’clock. His death will occasion a widespread feeling of regret. Though he had attained an age beyond fourscore years, he had by no means outlived his usefulness. For many years Mr. Wilder has been honored in this community as a man who was living with the most unselfish aims. While he appreciated the respect shown to him by public honors and private acts of kindness, he was never happier

than when it was in his power to make others happy. The accumulation of large wealth was not within the scope of his ambition. His love of horticulture and of genealogical pursuits gave ample occupation to his active mind. His promotion of pomology has been of benefit to the people of the whole country.

Col. Wilder was born at Rindge, N. H., September 22, 1798, coming from an old Massachusetts family. His father, Samuel Locke Wilder, removed to Rindge from Sterling, Mass., and engaged in mercantile pursuits there with a brother. He became an honored citizen of his adopted State, serving in the Legislature thirteen years, and holding other important positions. Marshall was the oldest son. Placed in school at the early age of four years, he continued his studies until sixteen years old, becoming a pupil in the New Ipswich Academy at the age of twelve. When ready to enter college he was allowed by his father to choose between continuing his education, entering the store or becoming a farmer. The taste for husbandry which has been the prominent characteristic of his life led him to choose farming as his occupation, and he went to work on a farm. But his father's growing business soon demanded his services in the store, and, forsaking his chosen calling, he assumed a subordinate position under his father and uncle. Industry and faithfulness marked his course here and he rose step by step until finally, on attaining his majority, he succeeded his uncle in the firm, which became S. L. Wilder & Son.

BUSINESS LIFE.

The partnership with his father continued about four years. In 1825, his ambition for a larger field of operation led him to remove to Boston, where he began a wholesale business in West India goods as head of the firm of Wilder & Payson, locating on Union Street, removing subsequently to North Market Street, when the firm name was changed to Wilder & Smith, and finally taking the entire business in his own hands and locating at No. 3 Central Wharf. In 1837, he changed his line of business, becoming a partner in the commission house of Parker, Blanchard & Wilder, rising eventually to the leading partnership in the concern. As a business man he attained and held a high position, and was honored with a number of important trusts. One of the original directors of the Hamilton Bank and of the National Insurance Company, he held his position in each many years. He was a director of the New England Mutual Life

Insurance Company more than a score of years and also held directorship in other institutions. Strict integrity in all his transactions, gentlemanly manners in all his intercourse with others and faithful attention to every duty made him both popular and successful as a business man, and no chapter in his history is more creditable to him than this.

Col. Wilder was a most successful pomologist as well as floriculturist, and after retiring from the presidency of the Massachusetts Horticultural Society began to work for the promotion of education in the matter of fruit raising. He had done a great deal in the way of improving fruit culture on his own estate, and was widely known both in America and Europe as an ardent student of pomology. He succeeded in securing the organization of a "National Congress of Fruit Growers," but at the same period a "National Pomological Convention" was organized in New York. Of course there was no necessity for two similar societies, and steps were taken for securing a consolidation. This resulted in the formation of the "American Pomological Congress," of which Col. Wilder became President soon after the consolidation, retaining the office to the time of his death.

The United States Agricultural Society was another result of Mr. Wilder's labors. In 1852, as President of the Massachusetts Board of Agriculture, which board was formed during the previous year, he called a National Convention of Agriculturists. The convention met at Washington and the Society named was organized with Mr. Wilder as President. He retired from this office in 1858, on which a silver tea service valued at \$250 was presented to him.

Col. Wilder, in addition to his membership in the societies we have named, has also been connected with similar organizations in other lands, such as the Royal Horticultural Societies of Paris and of Frankfort-on-the-Main, and the Pomological Society of Van Mons of Belgium, by which he was appointed a Commissioner for America. The fact that his reputation is not bounded by his native country has been shown in various ways, but in none more complimentary than in the publication a few years ago of a sketch, with portrait, in the London Gardener's Chronicle. We quote the following from the sketch :

"We are glad to have the opportunity of laying before our readers the portrait of one of the most distinguished of transatlantic horticulturists, and one who, by his zeal, industry and determination, has not only conferred lasting benefits upon his native country but has

by his careful experiments in hybridization and fruit culture laid the horticulturists of all nations under heavy obligations to him. The name and reputation of Marshall P. Wilder are as highly esteemed in Great Britain as they are in America.

Mr. Wilder was President of the Massachusetts School of Agriculture, incorporated in 1858, and has been a trustee of its successor, the Massachusetts Agricultural College, since its establishment. To the latter he gave a collection of more than 1000 valuable plants. He was one of the prime leaders in the movement which gave to Boston the Natural History Rooms and the Massachusetts Institute of Technology, has been long a member of the Massachusetts Agricultural Club, has been a member of several commissions appointed in connection with agriculture, and has been an industrious writer on subjects connected with his favorite pursuits."

HORTICULTURE AND AGRICULTURE.

The varied interests which during his busiest years demanded his attention did not withdraw Col. Wilder's mind entirely from the consideration of matters connected with the calling to which he was inclined early in his life to devote himself. Horticulture and agriculture have had few more devoted students than he has been, and perhaps no other person has ever done more to advance these branches of industry toward perfection than he has. The garden and the field were his places of recreation, and he studied much and went to great expense to develop them. Not only did he endeavor to improve the native products of the soil, but he imported trees, plants and seeds, and tried in every possible way to add dignity and worth to the profession of husbandry. His library was enriched by whatever valuable works on his favorite studies were to be obtained, and he has been regarded for many years as a leader in all matters relating to the field, the garden and the conservatory. His studies in connection with pomology have been especially valuable. His labors have happily met with wide appreciation, and it was both a pleasure to him and an honor to the various societies that have shown tangible recognition of his merit that none of his efforts in the direction of making "the wilderness to bloom as a rose" were allowed to expend themselves fruitlessly. One of the earliest members of the Massachusetts Horticultural Society, which was formed in 1829, he was associated with the late Dr. Jacob Bigelow in the movement which resulted in the purchase and laying out of Mount Auburn Cemetery,

and it was to his good management that the amicable separation of the society and of the proprietors of the cemetery, accomplished in 1835, was due. He was elected President of the Horticultural Society in 1840, which office he held eight years, securing within that time the erection of a fine building for the society on the present site of the Parker House. This building was occupied until the need for more commodious quarters became pressing, when it was sold at a considerable advance on its original cost, and the corner stone of the present building was laid in 1864. Mr. Wilder declined another re-election as President of the Society in 1848, and his retirement was the occasion of some very flattering tributes to the efficiency of his administration, one of which was the gift of a silver pitcher valued at \$150. Since that time he has maintained an active connection with the Society and has always been ready to work for the advancement of its interests. His studies and experiments in floriculture have been interesting and have gained him a wide reputation. He was especially successful in the cultivation of the camellia, and in his honor two seedlings of that flower raised by him have been named by the Horticultural Society the Camellia Wilderi and the Mrs. Abbie Wilder, respectively. He was also awarded a premium of \$50. The Camellia Wilderi was sold to J. L. F. Warren of Brighton for the extraordinary sum of \$1000. In 1853 he was honored by the Society by the placing in its hall of a fine marble bust.

VARIOUS PUBLIC SERVICES.

As a presiding officer Col. Wilder has always been regarded as the possessor of qualities which made his presence in the chair a matter of satisfaction. He was frequently called on to officiate as President of the Day, notable occasions being in Boston, Oct. 29, 1852, and the celebration of the 225th anniversary of the settlement of Dorchester, July 4, 1885.

A visit to Europe in 1867 was a pleasant event in his life. He went to represent the United States Agricultural Society, and while abroad he was appointed United States Commissioner at the Paris Exhibition of that year. He returned Sept. 1, and immediately went to St. Louis to attend the meeting of the American Pomological Society. During his visit to Europe he devoted much of his time to investigating the condition of pomology and horticulture in England and on the Continent, and received very kind attentions from the

leading pomologists of Europe, to whom his labors in that science in this country had made his name familiar.

In January, 1868, Mr. Wilder succeeded the late Hon. John A. Andrew as President of the Massachusetts Historic Genealogical Society. His election was unanimous, and he has been re-elected every year since. The funds for the purchase of the premises on Somerset Street were secured by his personal effort. At each annual meeting he had delivered an interesting address, and in view of his death so soon after the last was delivered, we cannot refrain from quoting the following significant paragraph therefrom :

“Human life is changing and transitory ! A few more days, a few more months, and this tired brain and this languid tongue will have cast off their threadbare, worn-out covering ; but the spirit shall continue to praise God for His wonderful works in this Western World, and the blessings which have flowed from the influence of New England character. We shall pass away, and the dust of past and future generations shall be commingled with ours in one common grave. But more and more appreciated for the work it has done and is doing, so that the record of our own New England and its families may be perpetuated with historic continuity while the Anglo-Saxon race shall have a place in the annals of time.”

INTERESTING EVENTS.

On September 22d, 1877, Col. Wilder completed the 80th year of his life, and the event was made one of very pleasant moment by his many friends. A banquet was given at the Parker House, ex-Alderman Chas. H. Breck presiding, and many prominent gentlemen honoring the guest by their presence. Col. Wilder made a speech full of reminiscence, and was followed by Hon. Charles L. Flint, Charles M. Hover, Esq., Rev. J. H. Means, and a number of others. In 1883 a banquet was given in honor of his eighty-fifth birthday, at which a number of ex-Governors of New England States were present, and in 1886 his eighty-eighth birthday was celebrated by a dinner.

WRITINGS.

We have already stated that Col. Wilder has been an industrious writer. From 1835 to the time of his death he published more than sixty pamphlets, mostly addresses which he had delivered on agricultural, horticultural, pomological or historical subjects.

DOMESTIC LIFE.

We come in conclusion to that chapter of personal history which, in the case of such a man, is most sacred. Col. Wilder was a man of the purest character and of domestic habits. Such tastes as his were when cultivated are certain to develop the home instinct, and it was therefore natural that he should have a happy home. He was married on December 31, 1820, to Miss Tryphosa Jewett, daughter of Dr. Stephen Jewett of Rindge, N. H. Six children were born of the marriage. Mrs. Wilder died during a visit to Rindge, July 31, 1831. Col. Wilder married a second time, Abigail Baker, daughter of Capt. David Baker of Franklin, Mass., becoming his wife August 29, 1833. Six children were born of this marriage, also. Death again left him wifeless April 4, 1854, and he married on September 8, 1855, Julia Baker, a sister of his second wife, who has borne him two children.

The many friends of Col. Wilder honored the anniversaries of his birth in late years by pleasant reunions and congratulatory calls. A friend who sent kindly greetings in September, 1886, received the following reply, which is characteristic of the man :

DORCHESTER, September 23, 1886.

My dear old friend: Your kind notice of me and your still kinder letter are in hand. Words cannot express my gratitude I feel for the congratulations I am receiving on the return of another anniversary of my birth. I am not worthy of such affectionate regard, for I have only been following the instincts of my nature and the convictions of my conscience in much of what I may have done for the great interests which I have tried to promote; and so I shall continue to labor while life and strength shall last. But ere long all of us must pass over to that better land where the proofs of life shall be finally set up and the types of earth be exchanged for the types of blessed immortality in Heaven.

As ever yours,

MARSHALL P. WILDER.

1798-1886.

A PERSONAL TRIBUTE.

The memorial discourse at the funeral was delivered by Rev. Edward N. Packard, pastor of the Second Congregational Church, Dorchester, with which Col. Wilder had maintained an active connection for upward of half a century. The closing portion of the discourse is here given :

The remarkable successes of this long life have been largely due—shall we not say?—to qualities of heart. This large assembly to-day, representing so many of the departments of his beneficent activity, will, as individuals, remember the man as a friend. He lived in his friends. With his friends he worked for great objects; for friendship's sake, nothing but honor was too dear to be withheld! He “loved the praise of men”—we all knew that—but it did not lower him in our thoughts, for he sought the approbation of the best by no sinuous processes, surrendering nothing, losing nothing. His heart was an open fire, around which men gathered instinctively. We may well question whether there has ever lived in this State a man who has enjoyed more friendships and more worthy ones. Gather the foremost men of the whole region for fifty years past in the walks of trade, of art, science, politics, jurisprudence and the so-called learned professions, and how few among them were not personal friends of our departed brother—a brother indeed to them all!

They have sought his counsels, received his encouragement, and the best men were his best friends! He seemed to say to all who were worthy of his confidence, “If thy heart is as my heart, then give me thine hand!”

His domestic life, extending over a period of more than threescore years, has been singularly happy, although its very happiness has opened the door to the sorrows inseparable from the mortal lot. He has survived his three wives and nine of his fourteen children. Yonder cemetery, to which we are about to wend our way, contains what he used to call his “garden of graves.” He has said during his past year in terms of reverie, “I shall be with wife soon.” Old age has its pleasures, but the sadness of frequent partings is mingled with them, and these impressed themselves deeply upon his heart. He lived to see generations of the good and noble with whom he had been intimate pass beyond his touch and sight; and as I have heard him at times speak of this and that one, to whom his soul had been grappled with hooks of steel, who had laid down to sleep first, I have recalled the lines of the poet Vaughan, as expressive of his feelings about the host of the departed:

“They are all gone into the world of light,
I alone sit lingering here!
Their very memory is fair and bright,
And my sad thoughts doth clear,
It glows and glitters in my cloudy breast,
Like stars above some gloomy grove,
Or those faint beams in which the hill is dressed,
After the sun's remove.”

In the narrower circle all these gracious and winning traits had full play. He loved his neighbors and, in turn, was loved by them. For fifty-four years he was a member of this parish, and for fifty, at least, there were few Sundays that did not see him in the family pew a reverent listener and worshipper. He was a most generous supporter of the Gospel and promoted all the good works to which the church lent her hand. To

say that he has contributed thousands of dollars for these interests beyond the merely business claims of the parish, would be but a tame statement. He has been a most faithful worker, presiding for years at the annual parish meetings, giving dignity and stability to the whole course of things in which he has taken a conspicuous part down to the last days. It is only a few weeks since he brought his check to the treasurer for \$500 toward the renovation of this house of worship. For fifteen years he was the valued friend of the first pastor of the church, Dr. Codman, and, when death terminated that long and good ministry, he joined in calling his successor—Dr. Means—who, in a pastorate of thirty years, had no firmer supporter nor more generous helper. And when the day came for another to take that place, he entered vigorously into the plans and correspondence necessary, signed the call as chairman of the parish committee and greeted me, when I first descended from this pulpit, eight years ago, with a cordiality and kindness I can never forget. That old-time courtesy, that delicate consideration, that freedom of conversation on the deepest themes, at all times; the hours of bereavement and sickness in which we have been drawn peculiarly near to each other—the last Thanksgiving remembrance from his orchard—these will always be among the choicest treasures and best honors of my life.

He inherited a strong religious bent from his godly ancestry, and was brought up under the old regime of faithful instruction and implicit obedience. Around him the most helpful influences have always been thrown, in the innermost circle of his life. The prayers of the now sainted women, whom Providence gave him as his wives, have girded him for the toil and conflict of his long day. Nor have his own been wanting. It has been his custom for 34 years to ask a blessing at his meals and gather his family around him every morning, down to the very last, to hear a portion of the Word of God, to sing some familiar hymn—his favorites being sung to us to-day, the “Sweet Bye and Bye” being his hymn above all others—and then to kneel and seek the favor of God. He invariably offered an earnest petition for a “heavenly inheritance,” and that “we may be led in the paths of salvation for Christ’s sake.” This last was his last petition on the morning of his death. To one of his family he said not long ago: “I tremble when I think of the temptations to which I have been exposed; but God has kept me from yielding to them.” To me he said within a year: “I am sure that my life has been a selfish one. I do not know that I have ever done anything from the best motives. I have no claim save on the mercy of God. If I am permitted to enter Heaven it will be as a little child to learn His will.”

The greatness, the incomprehensibility of the Deity, were frequently in his thoughts. He said recently that all he could do was to throw himself upon the mercy of God, and that he believed in Christ. In the midnight watches, during the past year, he has been overheard praying, and only on the last night of his life he was heard to say, “O Lord, have mercy upon me.”

His sun sank serenely to the west. Old friends passed on, but younger ones filled their places and thronged his path. He could say with Job of old, "I washed my steps with butter and the rock poured me out rivers of oil; when I went out to the gate through the city, when I prepared my seat in the street, the young men saw me and hid themselves and the aged arose and stood up; the princes refrained from talking and laid their hand on their mouth. The nobles held their peace and their tongue cleaved to the roof of their mouth. When the ear heard me, it blessed me; and when the eye saw me it gave witness to me. I put on righteousness and it clothed me; my judgment was a robe and a diadem. I was eyes to the blind and feet was I to the lame. I was father to the poor, and the cause that I knew not, I searched out. My root was spread out by the waters, and the dew lay all night on my branch. My glory was fresh in me and my bow was renewed in my hand."

On the morning of his sudden departure he rose as usual, took breakfast, led in devotions, dictated a letter and signed it in his bold but trembling hand, and as he turned to greet his physician with a word of good cheer he pressed his hand upon his heart, fell back in his arm-chair to breathe out his spirit without a sigh or a groan.

Fortunate in his death as in his life. We shall see him no more, and the world which he has made a different one to us will be different to us with his departure.

THE ROSE—ITS CULTURE AND INSECT ENEMIES.

By JOHN POSTE.

[From Journal of the Columbus, Ohio, Horticultural Society, 1887.]

When seeking to adorn our gardens and we are selecting from the extensive and varied assortment of floral beauties from which, in this day, we are privileged to choose, the rose will at once occur to us as entitled to pre-eminence, combining, as it does, in one "charming whole, those features which singly characterize our most popular flowers, viz., beauty and variety of form, rich colors and delicate tints, with the most delightful perfumes." With such characteristics it has been rightly called the "Queen of Flowers."

Now, as true lovers of floral beauty can for themselves select their ideals of excellence in shape or color, from any well-assorted collection, I will leave them fancy free to select from the numerous varieties and classes, and rapidly passing along will only point out, here, the delicate bud of the tea rose, which in its maiden modesty charms one with its non-expanding coyness, and there, of the hardier constituted Remontant, with unblushing consciousness of purity, invites

you to look into its richly perfumed heart of hearts. Deeply impressed with the exquisite gradations of form and color, having finished our selection, we are in a frame of mind to quickly pass from the sentimental to the practical, and to receive hints as to the necessary *conditions of culture* to secure the best results. It is upon this branch of the subject, I presume, that I am desired to give any information I am able to offer.

When you plant roses, you desire an abundance of blossom and luxuriance of growth; to produce these results, you must give the necessary conditions of soil, judicious pruning, climate and location.

Your soil, if not naturally so, must be made as nearly as possible a deep, porous loam; on the one hand, not too light and sandy, nor, on the other, too stiff and cold a clay—as nearly the happy medium as possible—a retentive but thoroughly drained soil. Almost any soil can be brought to proper condition by spading to the depth of fifteen inches, and incorporating with the natural earth well-rotted manure and sand if too heavy, and of well-rotted manure and clay, and perhaps wood ashes, if too light and sandy. The rose is a hearty feeder, therefore will bear annual manuring, and as results are desired to follow annually also, none but *well-rotted* stable manure or sod should be applied, or such other stimulant as can be readily assimilated with the soil.

In planting in such a prepared bed, make your holes large enough to place the roots so as not to cramp them, then press well to the roots the earth first put in, but leave the surface dirt loose, so as to admit rain or such artificial watering as may be necessary, in a dry time. An excellent liquid manure for watering the soil in immediate proximity to the roots can be made by soaking the scrapings of the chicken house in a barrel of water a few days before using.

Now as to pruning. Since the rose bears its blossoms only on the young shoots of the current year's growth (as with the grape), therefore in the spring cut back the last year's wood freely, entirely removing any dead and half dead branches, and cutting back those you leave to the strongest buds; cut the unbranched shoots or canes to such height as the bush is desired to be; each bud left will make a blossom-bearing branch, so don't be afraid to cut back, as from them you will get your finest blossoms if so treated. Roses that bloom more than once during the summer, such as the Tea, Noisette, Bourbon, China, and the Hardy Monthlies, so-called, or Remontants, should be pruned back after the first blossoming to a strong bud, then

a vigorous new growth will start which will bear the next crop of blossoms. Never allow haws, or seed capsules to mature on your bushes, for in bringing the seed to perfection they will so far sap the vitality of your plant.

Of the insect enemies of the rose I will first mention the slug, which by skeletonizing the foliage destroys nature's well devised economy of atmospheric absorption through the leaves and their adjunctive assistants—the very lungs of the plant—thereby preventing that vigorous new growth which we have seen is absolutely necessary to the production of blossoms. Any dry dust or powder coming in contact with their slimy bodies will destroy them; having thoroughly applied your dust, whether it be road dust, lime, or any of the powdered insecticides of commerce, after the lapse of a few hours thoroughly syringe off the foliage and restore it to its normal condition of respiratory organs. The green fly, which, however, is most likely to prove troublesome in the conservatory, or to house plants, readily succumbs to tobacco, water or smoke, or to immersion of the affected limbs in water as hot as the hands will bear. The red spider is easily routed by systematic watering alone.

The bug which attacks the opening bud fortunately is comparatively rare; it is best removed by hand picking or eradicated by persistent syringing with any insecticide, or even pure water; but recollect that bushes from which dead and half dead limbs and rubbish have been seasonably removed, and are getting proper food, are rarely much affected by any insect pests. Imperfect blossoms, stunted growth, a general consumptive appearance, are a mute appeal to you for better soil, more food, and the removal of superfluous wood—the incubus of an unhealthy past—the prompt cutting loose from which we will all acknowledge as necessary for human reform. Then realizing that the main essentials of plant life are identical with those of animal life, if you will take your garden pets into your family, do unto them as you would be done by. My long acquaintance with her majesty, our queen of the garden, enables me to promise you right royal favors in return for the tender treatment you will accord her.

LIST OF BEST ROSES FOR BEDDING.

CHINA.—Agrippina—crimson; Douglass—cherry red; Madame Jean Sisley—white; Eugene Beauharney—crimson.

BOURBON.—Hermosa—rose ; S. de la Malmaison—blush ; Queen Bedders—dark crimson ; Mad. Bosanquet—flesh color ; Louis Margottin—rose ; Alfred Aubert—bright red.

HYBRID TEA.—La France—silvery pink ; Duc de Connaught—crimson.

TEA.—Duchess de Brabant—rosy salmon ; Duchess of Edinburgh—crimson ; Etoile de Lyon—light yellow ; Bougere—bronze rose ; Bon Silene—deep rose ; Catherine Mermet—pink ; Mme. Welch—amber yellow ; Mme. Rachel—yellowish white ; Maria Guillot—white ; Devonensis—creamy white ; Sunset—light amber ; Souvenir d'un Amie—rose.

HYBRID PERPETUAL.—Gen. Jacqueminot—crimson ; Coquette des Alps—white ; Captain Christy—flesh color ; Victor Verdier—cherry ; Magna Charta—clear pink ; La Reine—deep rose ; Sydonia—light rose ; Anna de Diesbach—clear rose ; Jules Margottin—deep rose ; Giant of Battles—crimson ; Gen. Washington—crimson ; Paul Neyron—deep pink ; one of the largest roses, if not the largest.

SEEDLING AND RUSSIAN APPLES.

By PETER M. GIDEON.

[From Report of the Minnesota State Horticultural Society, 1887.]

It is with pleasure that I comply with your request to give my views on Russian and seedling apples. The seedling has been my hobby for the last sixteen years, and the success attained gives me hope that not far in the future the cold Northwest will be one of the leading apple-growing districts of North America.

Twenty-three years ago I planted a few cherry crab seeds, obtained of Albert Emerson, Bangor, Maine, and from those seeds I grew the Wealthy apple ; in seven years it fruited, and that fruit convinced me that the true road to success was in crossing the Siberian crab with the common apple, and on that line I have operated ever since, with results surpassing my most sanguine anticipations. I did not suppose that in the short space of sixteen years, the time since the Wealthy first fruited, that I should have more than twenty first-class apples—as good as the world can produce—in succession from the first of August to March, and in hardiness of tree surpassing all known varieties of the common large apple. But it is done, and in the doing the problem is solved, as to what to do and how to

do it, with the material at hand with which to attain yet greater results. At the outset, it was test and try; but now that the problem is solved, it is onward, with great results certain.

When I say we have twenty first-class apples, that does not include all that are worthy of cultivation, by any means. And now, with such results, and only a few thousand trees fruited at the end of sixteen years, what may we not expect at the end of the next sixteen years, with twenty or thirty thousand choice, selected trees from the very best of seed, which are not yet fruited, and the seed of over 100 bushels of choice apples planted this fall, all to fruit in a few years. Then on, on, planting the seed of the best each year; soon the choice varieties will count into the hundreds, and the great Northwest will be the fruit paradise of America.

To get the desired cross we plant the selected varieties in close proximity, so that the natural flow of pollen will the more surely do the desired fertilizing, and the seed thus produced is planted, the most promising of the seedlings selected and set in orchards for fruiting, and, after fruiting, the best in tree and fruit is selected from which to grow seeds to try again, and so on, at each repetition I find there is a gain. The young trees that fruited this year for the first, gave a larger percentage of first-class apples than any lot ever fruited before.

By crossing and judicious selection we retain the hardiness of the crab in the tree without the crab thorns, and on top grow large apples without the astringency of the parent crab. And yet, by the commingling of the two natures, we get an exquisite flavor not found in any other class of apples, especially so when made into sauce. But our triumph is not yet complete; we must, we can, fill up the balance of the year with a continued succession of luscious apples. There is no question as to the certainty of such a result; the past is a guarantee that it can be done.

But the proper cross can't be got in Minnesota, a fact clearly demonstrated in the extensive and expensive trials that have been made in the last nine years in the State orchard. And here let me state, that the seedling is inclined to ripen its fruit at or near the time the parent apple did, from which the seed was taken, hence the need of seed from long keepers to grow the same. There are no long keepers of the best quality yet found that are hardy enough to fruit in Minnesota, but we can take our best hardy seedlings further south, where the long keepers can be grown, and there get the cross and

then bring the seed here to grow and test the hardiness of tree and quality of fruit. We want first-class apples, and to get them we must use first-class parentage. And even then scullions will be numerous, from the fact that all varieties of apples are mongrels of many degrees of crossing, and the various relations will crop out in a multitude of forms. But past success is a guarantee for the future, that out of the many some will be good. Our seedlings will average in quality with Hyslop and Transcendent; but those of first-class, such as we propagate, stand about as one to five hundred, as hardy Duchess and Wealthy, and of the extreme hardiest about one to one thousand five hundred.

SEEDLING TREES FOR DISTRIBUTION.

Two years ago this winter was the first time the Duchess and Wealthy were seriously hurt, and a like fate befel all the Russians on our grounds, so that not a Russian set an apple on our grounds last year, whilst alongside of them our seedlings carried a fair crop, some of them profuse, and this year all bore heavy crops; showing beyond a question that the crab infusion is to be the foundation of successful fruit culture in the Northwest. The State orchard yielded about one hundred bushels of apples this year, all of them being of our own seedlings; all else of value failed two years ago this winter. This fall we planted the seed of over one hundred bushels of choice apples, to grow trees for trial purposes. We now have thousands of choice trees on hand for distribution to those who want one, two, three and four-year-old trees from seed. Those who come and dig the trees will get them free of cost, others will have the cost of digging and packing to pay; and, unless otherwise instructed, will ship free of cost, except as above stated, to any one in the Northwest who may so order. The great bulk of the trees are two years old. The cost of digging, boxing or bundling would be about one dollar per hundred. All who get trees will be expected to take good care of them until they fruit, and if any prove of extra value, so report, but the trees and the profits thereof belong to the cultivator. We only ask the report, that we can note the progress. The trees which produce poor fruit can be top-grafted with any good variety that the owner may select, and thus make permanent trees of value. Those who want large trees had better come and do their own digging and thus save a large bill; the trees are large for their age and a more promising lot of seedlings I never saw.

PLANT VARIOUS KINDS.

Though we have a good collection of hardies, and in succession from the first of August till March, yet, I would not discourage the planting of Duchess, Wealthy, and some of the best of the Russians. Their value is too great to be rejected on account of one partial failure, after over twenty years of uninterrupted success, for such a winter as that of two years ago may not occur again in a lifetime, if ever. If those varieties should stand only ten years, they would be the most profitable crop a land owner could plant. Therefore, I advise to mix them in with our extra hardies, especially if you have a clay soil, for in such they do best. A north, northwest or northeast exposure is the best for the apple, and, indeed, for any fruit except the grape—give that all the sunshine you can.

While on the subject of apple culture, let me state a few facts in regard to root-grafts. The so-called crab roots are not all hardy—none are pure crab, all are mongrels—and where the crab predominates the graft that is not a crab mongrel does not take well, neither on root or stock. The mongrel root and mongrel stock are only preferable when a mongrel graft is to be inserted, but as all such are not hardy, a good mulch is needed, of some coarse litter, to make sure against root-killing under certain conditions, as not all winters will kill even the most tender roots.

The common apple will not make a smooth junction on a stock where the crab predominates, and, consequently, will not make a lasting tree, and a hardy variety grafted or budded on the common apple stock is worthless, as the stock below the junction of graft or bud is sure to winter-kill the first hard winter. You can protect a tender root, but you cannot save a tender stock, so avoid the tree agent with his budded trees.

NURSERY FRAUDS.

And, lastly, it matters not where a tree is grown—whether east, south or north—that tree is best that comes to the planter in the best condition, if true to name; but, with the great mass of tree planters, the smooth-tongued agent with his rubbish and frauds is the one thing needful. Though fleeced a score of times, they patronize him the twenty-first time as freely as ever, and the bigger the price of the fraud the more greedily they swallow the bait. The fact is notorious that tree agents have sold one hundred trees of the Gideon apple, at one dollar per tree, where I, the originator, have been

able to sell one at twenty-five cents. They have been swindled so often, and paid so dear for it, that they have come to love to have it so. They are wedded to the agent; it is love's union, and dead trees, plants and grape vines cannot separate them.

EXPERIMENTS WITH KEROSENE EMULSION ON THE APPLE-TREE APHIS.

BY CHARLES LITTLE, Rochester, N. Y.

[From Proceedings of the Western New York Horticultural Society, 1887.]

The summer of 1886 was, in this vicinity, an unusually severe one for nursery stock, particularly cherries and apples; the black aphis on the cherry and the green one on the apple-trees being unusually numerous and persistent, and of course they gave us nurserymen a great deal of trouble.

The cherry aphis appeared first, but, fortunately for us, were not so numerous on our trees as on those of some of our neighbors. We went over the trees two or three times with the old remedy of whale-oil soap and tobacco-water, but found it of comparatively little use, as a solution strong enough to kill the aphis was also strong enough to affect the trees injuriously; and, as our trees had made a considerable growth before the appearance of the aphis, we did not pay much attention to them afterwards.

The apple aphis appeared about the usual time, and, at first, we were not much concerned about them, expecting that they would disappear, as usual. But for some mysterious reason of their own they did not take their departure, and began to increase alarmingly fast. On our yearling trees we tried dipping in whale-oil soap and tobacco-water with success, but to dip a large tree was a slow and costly operation. We then began to look about for some cheaper and quicker method. We found, by experimenting on a small scale with kerosene soap, that it was sure death to the aphis, but this soap was open to the same objection as the other remedy; it was too costly.

About this time there was published by the Department of Agriculture, at Washington, a receipt for killing the hop-louse, which was making such ravages in the central part of the State. As the principal ingredient was kerosene, we determined to try it on our apple-trees. It was a decided success. After going over our blocks twice there were few or no aphides left, and the expense was trifling

in comparison with any of the old methods, both as regards the cost of materials and the labor of application.

The receipt is as follows: "Spray the trees with the following mixture: Kerosene, two gallons; one-half pound common soap, or whale-oil soap; water, one gallon. Heat the water, and dissolve the soap in it; then add it boiling hot to the kerosene. Churn the mixture by means of a force-pump and spray nozzle for ten minutes, when it will form an emulsion. Dilute before using one part of the emulsion with nine parts of cold water. This mixture will kill every louse that it touches, and the good accomplished depends only on the thoroughness of the application." It will be seen that two gallons of kerosene and one-half a pound of soap make, when diluted to the right strength, thirty gallons of wash.

We have found that, in using this receipt, two precautions must be carefully observed: first, and most important, the oil and water must be thoroughly mixed; soft water is preferable. With a little experience it is easy to tell when the mixture is complete, as the fluid becomes a milky white, and all globules of oil disappear from the surface.

Second: The mixture should be applied to the trees in the form of a fine spray from a force-pump. The nozzle we used was simply a deflector; the mixture left the mouth of the nozzle in a solid stream, then struck against a tin disc, which flattened the stream into a fan-shaped sheet.

To illustrate my precautions: We made some experiments on a small scale with dipping, but found that unless the mixture was most thoroughly made, the young leaves would turn brown by coming in contact with the globules of kerosene which would rise to the top. The use of a force-pump obviates this difficulty, as, in the first place, the pump draws the mixture from the bottom of the vessel, and, secondly, the fine spray in which it is applied to the trees tends to divide into minute portions any kerosene that may be left unmixed.

Our method of handling the emulsion is quite simple. A small force-pump is fastened to a good-sized pail, which holds the liquid. On the front and rear of the pail two pieces of leather are fastened (like trunk-handles). The front handle and nozzle of the force-pump are held by one man; the back handle is held by a second, who, with the other hand, works the pump. In this way three men (one to make the emulsion and two to man the pump) can go over two to three acres of four-year-old apple trees in a day.

The pumps we used were very simple, costing only \$10 a dozen, and they answered the purpose as well as a more expensive article. There is one little bit of tinkering to be done, however; there is a rubber valve in the pump which soon gets soft and worthless; this should be replaced by a common marble, and the machine is perfect.

As regards the effect of this emulsion on the cherry aphid, I can say but little, as our experiments were not decisive; but they were encouraging enough to induce us to give it a much more thorough trial next summer, if necessary.

STORING APPLES FOR WINTER.

By HENRY M. DUNLAP.

[From Transactions of the Illinois State Horticultural Society, 1886.]

I put my apples into the cellar the last of October or first of November, after carefully sorting, placing them in open bins made of pine lumber, or in barrels, according as I expect to sell in a local market or ship. Winter fruit I pick as late as possible, being governed by the weather, color of fruit, and how well it adheres to the tree. Place in piles under the north side of the tree, and remove to the cellar on a cool day, or during the morning hours. If it is intended to store in bins, I fill the bushel boxes before mentioned at the piles, carefully assorting the fruit at the same time. The filled boxes are transferred to the cellar and there the contents carefully emptied into the bins.

If it is desired to store in barrels, the barrels are filled in the orchard, headed without the use of the barrel press, and stored in tiers in the cellar, as many deep as cellar will permit. The apples in bottom tiers keep the best. It is desirable to have narrow alleys between the rows of barrels, in order that access can be had to any barrel in the cellar. These alleys also prevent the rats from doing damage to the fruit, because no cover is afforded them in which to hide.

Storing in bins I much prefer where apples are marketed in bulk, the cost of the barrels being saved. The bins are made by laying upon the floor of cellar two-by-four inch lumber, and pine boards upon these for the floor of the bin. The two-by-fours should be close enough together to prevent the sagging of the boards, and thus affording an entrance for the rats. My object in having these two-inch pieces beneath the bin floor is to afford circulation of the

air. Next to the side walls I nail up strips one inch thick, with the pine boards forming the sides of the bin removed from the wall one inch, thereby making the circulation about the bin complete. Any kind of pine lumber will do, and can be used for any length of time, if exposed to the sun before using, and allowed to cool in the shade. I usually use fence lumber, and find it useful in the spring, either in building new or repairing old fences. Care must be taken to have the sides of these bins as tight as possible, so that no holes are left for the rats to get in. I have found that rats will not attack an open bin of apples filled to the top, but allow him to get an opening into the bottom or side of bin, where he can work in secret, and he can make more chips than an old-fashioned hand cider mill; for he worketh both night and day, and his jaws are reversible. I have found that apples keep best when they are four to five feet deep in the bins. Large dry goods boxes are excellent, or for storing for family use, shoe boxes can be used, and covers nailed on.

Ventilation and temperature are the two most important items in keeping apples. For the first four weeks that apples are in the cellar, and while the temperature is warm during the day and cool at night, I open the cellar in the evening and close up in the morning, and when the first cold snap comes I leave the cellar open both day and night, closing up when the weather again turns warm. During extreme cold weather the cellar must be opened on the opposite side from the wind, and can be allowed to remain open until the temperature in the cellar goes to 25° , when it should be closed until it runs up above the freezing point, which, owing to latent heat in the apples, it will quickly do. This process of ventilation can be repeated until you have your apple cellar about 32° , when it should be closed as tightly as possible, and not opened oftener than necessary. To keep apples, then, we should open the cellar when the temperature outside is lower than in the cellar, and close it when the temperature outside is warmer than in the cellar. Keep the cellar as dark as possible at all times. Burn sulphur in the cellar frequently, say once or twice each week for several weeks after apples are placed in the cellar. The nearer air-tight cellars are, the better fruit will keep. I find it much easier, and many times more profitable, to regulate the temperature of my apple cellar than to sort out rotten apples. My apples are never sorted until I get ready to market them, for the reason that apples will decay much faster after being disturbed, and it does not pay to handle twice. If they are not keeping, sell them at once.

FEWER ACRES OF SMALL FRUIT—MORE FRUIT TO THE ACRE.

By P. C. REYNOLDS, Rochester, N. Y.

[From Report of the Michigan State Horticultural Society, 1886.]

Very general complaint has come from nearly all sections of the country where small fruits are produced for market, that prices the past season were unremunerative. Such being the case, one of two alternatives seems to be indicated, namely: the reduction of volume of products or the diminution of its cost. It is a very difficult matter for fruit growers, scattered as they are over a wide area, to combine to reduce production. The orderly operation of the laws of trade and production have a tendency to diminish production when excessive, but combination rarely does. The prices of small fruits are destined, I believe, to rule low in the future, and growers will be wise to adapt their business to that condition of things. With unlimited land and labor for production, the amount produced will be likely to increase quite as fast as population. The proper way to cheapen production, in my opinion, is by producing more per acre. Every grower can do this for himself without the necessity of combination or co-operation.

Small-fruit growing used to be considered a branch of horticulture. Recently many have conducted it as if it belonged to agriculture. The result is not surprising. The horticulturist aims to grow large quantities of produce on small areas of land by means of heavy manuring and high culture, the agriculturist spreads his operations over broad areas of soil, which he cultivates enough to enable the roots of crops to spread through the soil, without serious obstruction, in search of adequate supplies of suitable food and to prevent weeds from obtaining such growth as to overcome the plants he is seeking to grow. The horticulturist seeks a small tract of garden soil, near a town or city, where he can have an abundance of fertilizers, laborers of the right kind, and where proximity to market enables him to deliver his products, from day to day, fresh to consumers.

Now, it seems to me that too many small-fruit growers have within a few years come to adopting the methods of the agriculturist rather than those of the horticulturist. They have planted their fruits in fields instead of gardens; they have manured as if for farm

rather than garden crops, and they have cultivated after the manner of farmers rather than as gardeners cultivate. Moreover, many have located remote from town, subjecting themselves to quite a tax in transporting their fruits to market and in transporting their laborers to and from their labor. Let the farmer stick to farm crops and they who are fitted by nature, tastes and training for horticulturists grow small fruits. This, I think, is the natural order of things, and to this I believe we shall be obliged to come.

Can it be proved that growing the same quantities of fruits on smaller areas of land will reduce their cost? I think it can. Let us first take strawberries, the fruit in which the grower now sinks the most money. We will say that 200 bushels per acre is a possible crop of strawberries. I have known much larger crops grown, but we will take 200 for our demonstration. I do not believe that the average yield, in the way they are generally grown, is over 50 bushels per acre. Suppose that a grower of strawberries cultivates so as to grow on one acre what he now grows on four, does any intelligent horticulturist believe that the berries would cost so much per quart?

To start with, the rent of three acres would be saved. At a low estimate this would amount to \$24 in the cost of 200 bushels. It would neither require the same amount of manure nor labor to grow 200 bushels on one acre than it would on four acres—one-half of each would be a liberal allowance. If 20 two-horse loads of barn-yard manure to the acre is generally applied under the present system, I think 40 loads would answer under the approved system, thus saving 40 loads, worth \$40, in the 200 bushels.

The cultivator of one acre would probably plow deeper and pulverize much finer, expending about as much labor in preparing the one acre for planting as the farmer does in preparing four acres. Only one-fourth the number of plants, however, would be required. If we plant three feet by eighteen inches it would take 9,680 plants to set one acre—three times the number, or 29,040, would be saved. At \$2.50 per thousand, these would amount to \$72.60. In planting the strawberries, I suppose that about one-half the time would be expended on the one acre that is ordinarily devoted on large plantations to four acres, and about half the labor in cultivating, hoeing, weeding and clipping runners. It is not practicable to make a very close estimate of the value of the labor saved, as different tracts of land differ so much in the amount of labor required to keep them clean and mellow, and the same grounds require so much more labor in a wet than in a

dry season. Taking an average of seasons, we will say that it would take four days' work to clean an acre of the larger plantation and that it would need cleaning four times before the first crop is grown. That would be 64 days for the four acres, which at \$1.50 per day would amount to \$96. It would be fair to estimate that half of those \$48 would be saved in labor by our plan of intensive culture.

When we come to the picking I think all will agree that it would cost not more than half as much to pick 200 bushels from one acre as from four. If it costs two cents per quart for picking, on the larger plat, it could be done for one cent on the smaller, and this saving of one cent per quart, or \$64 on 200 bushels, would afford a moderate profit on an acre. We have figured out savings as follows:

In rent of land	\$24 00
In manure	40 00
In plants	72 60
In culture.....	48 00
In picking	64 00
 Total	 \$248 60

This in 200 bushels, or nearly 4 cents per quart. If the agricultural strawberry grower comes out about even growing strawberries by farmers' methods, the horticultural grower might make a few cents per quart at the reduced cost.

Very likely considerably more can be done in cheapening production by extensive culture in strawberries than in other small fruits, but the same principle holds good in all. It is quite doubtful whether plantations of black raspberries, covering from 40 to 80 acres, yield upon an average more than 50 bushels per acre, yet 150 bushels are a possible yield. By cultivating so as to produce the latter amount you save the rent of two acres, the value of nearly 5,000 plants, and quite a sum in manure and labor. Raspberries planted six feet by three require 2,420 plants to the acre. To grow 150 bushels, 4,800 quarts, on those plants, every hill must yield about two quarts. There must be no vacancies and every hill must contain quite a number of strong, vigorous canes, and every cane must be productive. Such results can only be achieved by thorough, intensive culture.

The same methods would undoubtedly result in cheapening production of blackberries, currants, and grapes. I have visited a great many small-fruit farms during the last fifteen years, and the difference in yields where slack, partial culture and high, thorough culture were

followed, was too different to permit a doubt as to which resulted in most profit.

THE "BLEEDING" OF APPLE TREES.

By T. H. HOSKINS, M. D., Newport, Vt.

[From Report of the Minnesota State Horticultural Society, 1886.]

A recent writer says he has trimmed apple trees every month in the year, and has come to the conclusion that from May 25th to June 25th is the best time, because a wound made in the full flow of the sap will begin to heal immediately. He adds that March and April are the two poorest months to prune, because there will be a liquid "forming" (query, flowing?) out of the wound, which will kill the bark underneath the limb. Another writer insists that March is the best of all months to prune, because the sap is not then in motion, and the wound will dry before the sap starts, and that then the process of healing will go on most favorably, while anything but very light pruning in June will greatly weaken and sometimes kill the trees. Still another writer says, shortly and emphatically, "Prune when your knife is sharp," without regard to season. All these writers are orchardists of experience. Is there, then, no proper time to prune, or no way of intelligently reconciling the seemingly contradictory views of these practical men?

WHY APPLE TREES BLEED.

A widening accumulation of facts does, in all disputed questions, tend towards the reconciliation of conflicting opinions. In the thirteen years that I lived in Kentucky I never saw an apple tree "bleed," that is to say, I never saw a flow of disorganized and blackening sap from the stump of a severed limb. In the first years of my orcharding in northern Vermont, this so-called bleeding exhibited itself in nearly every case where a limb of any size was removed, no matter at what season the operation was performed. It was the most discouraging of my experiences at that time, and I could not understand it, or find a remedy for it.

About fifteen years ago, at a session of our State Board of Agriculture in the Champlain Valley, where this question of pruning and subsequent bleeding was discussed by many orchardists of that orchard country, one of the speakers dropped the casual remark that he had never known an apple tree that was not "black-hearted" to

bleed, no matter at what season it was pruned. That thought was much more fruitful to me than my orchard had been up to that time, for all my trees were black-hearted, except the Siberians and Russians, which I at once remembered never bled, no matter when they were pruned. And at the same time I remembered that apple trees are never black-hearted in Kentucky.

THE CAUSE OF BLACK-HEARTEDNESS.

The state of black-heartedness in the apple tree is unquestionably the result of excessive winter's cold. In New England a large proportion of the most popular apples are grown upon trees that are more or less black-hearted. The Baldwin is always black-hearted in Maine, New Hampshire and Vermont, and frequently so in the three southern New England States. Along its northern limit it can only be grown when top-grafted on some hardier stock. With me a Baldwin tree or graft has never lived long enough to bear an apple.

Now, if it be true that only black-hearted trees bleed, then the experience of orchardists must vary according to whether they are growing more tender or more hardy sorts. When I began, though I planted the hardiest known of New England sorts, yet almost all my trees became black-hearted in a few years. Now that nearly all of that class of trees have been up-rooted from my orchard, and replaced by the "iron-clads," I see almost no bleeding, and when I do see it I know the cause. I do grow a few sorts that suffer some in this way (such as Famineuse), because of the excellence of their fruit. The Famineuse is with me as hardy as the Baldwin in the upper Champlain Valley, and though the trees are short-lived in both cases, they are planted because of the merits of the fruit.

WHEN TO PRUNE.

In my experience it makes no difference at what season a black-hearted tree is pruned, as regards the subsequent flow of disorganized sap, provided the limb severed is so large that the stump will not quite or nearly heal over in one season. This flow takes place during the whole growing season, and injures (often kills) the bark over which it runs. A tender tree, subject to black-heart, should be pruned very sparingly. Branches not too large to heal over in one season may be taken off, and the best time to do this is in June, as the sap is then too thick to flow freely. But heavy pruning in June is a severe shock to the tree, even to the hardiest kinds, and

almost surely fatal to any tender sort. Fall and winter pruning is also injurious to tender sorts, as the bark around the wound will be killed for some distance, and there is little hope that it will ever afterwards heal. But any of the varieties that never become black-hearted may be pruned "whenever your knife is sharp," remembering this, that June pruning is a shock more or less severe, according to the amount of wood removed. "Prune in summer for fruit" is an old and correct rule, for the very reason that the shock of summer pruning (like anything that weakens the tree) tends to cause the formation of fruit buds. The effect is much like that of root pruning, and both must be practised with moderation and judgment.

ARSENICAL POISONS FOR THE CODLING MOTH.

[From Bulletin No. 1, of the Entomologist of the State of Illinois, Prof. S. A. Forbes, Ph. D., 1887.]

The Paris green mixture was of the same strength as last year, —three-fourths of an ounce by weight, of a strength to contain 15.4 per cent of metallic arsenic, being simply stirred up in two and a half gallons of water. The arsenic solution was made by boiling one ounce of arsenic in one quart of water, and adding this solution to twenty gallons of cold water. The method of procedure was precisely as last year, the trees being thoroughly sprayed with a hand force-pump, and with the Deflector Spray and Solid Jet-Hose Nozzle, manufactured by the Lowell Faucet Company, Lowell, Mass. The fluids were thrown in a fine mist-like spray, applied until the leaves began to drip.

As a summary statement of the final issues of the Paris green experiments for the years 1885 and 1886, we may say in a word, that, in 1885, eighty-seven per cent of the fruit exposed to damage by the codling moth was preserved to ripening by the poisons applied, and that fifty-eight per cent of the picked fruit had been thus preserved; or, that taking picked and fallen fruit together, sixty-nine per cent, which would otherwise have been sacrificed, had been saved by our remedial measure.

Furthermore, during 1886, seventy-three per cent was saved from falling by a single spraying, seventy-seven per cent by two, and about seventy-two per cent by three. The difference unfavorable to the last was doubtless due to the accidental differences in trees and treatment.

The benefit to the picked fruit apparent from a single spraying, stands at forty-seven per cent, and that from twice spraying, at ninety per cent, while that from thrice spraying falls away, again, to seventy-seven per cent. Or, summarizing still more briefly, we may say, in general, that *the results of once or twice spraying with Paris green, in early spring, before the young apples had drooped upon their stems, resulted in a saving of about seventy-five per cent of the apples exposed to injury by the codling moth.*

I wish especially to emphasize the fact that the results now obtained are drawn from computations so made that they may be expected to hold good without reference to conditions other than variations in the treatment itself. The apples protected from injury by the codling moth are evidently apples *effectively poisoned*, and our "ratios of benefit" really express the ratios of these poisoned apples to the whole number treated. These ratios clearly will not vary either with the abundance of the apples, with the abundance of the codling moths, or with anything else except the original treatment, and subsequent accidents affecting the *length of time* during which the poison may adhere to the apple. This view is, in fact, substantiated by the essential agreement between the results of 1885 and 1886, under conditions as widely different as it would be possible to find by ten years' waiting.

We have next to determine the time of the year at which poisoning is the most effective: whether, in fact, it takes principal effect upon the first brood or the later ones. A moment's reflection will show that if only the first brood of the larvæ was directly diminished in a certain ratio, the second brood should show a similarly diminished ratio, since these descend from the first; whereas if both first and second broods are directly poisoned, then the ratio of damage to the second brood should be greater than that to the first; or, in other words, the percentage of benefit to the picked apples should be greater than that to the fallen. Our data for the present season do not apply to this question, since all the sprayings were made in May and early June while the apples were still very small; and it is incredible that the poison should have remained upon the fruit through all the vicissitudes of weather and time for the two months and more that elapsed before the appearance of the second brood of larvæ. The results of 1885, however, when the spraying was continued until September 3, give us important information. Refer-

ring to our records it was shown that the benefit to the picked apples, instead of being greater than that to the fallen fruit, was in 1885 about twenty-seven per cent less, so that certainly no appreciable effect was produced by spraying during the life of the second brood. The greater injury to the picked fruit is readily accounted for by a circumstance to which I have already alluded: viz., that our experimental trees were surrounded by others upon which no experiment was tried, and were consequently subject to invasion by codling moths of the second brood reared upon these unpoisoned trees.

Not only do these experimental facts point to the inefficiency of Paris green as against the later broods of the codling moth, but it is plain that the result was what we must have expected *a priori*. As the codling moth of all broods deposits the egg habitually on the blossom end of the apple, the poison taking effect only in case it reaches the surface of the apple between the calyx lobes, it is evident that there is little probability of effectively poisoning the fruit when the apple is full grown and pendent upon its stem,

Furthermore, I wish to emphasize especially the point that *spraying after the apples have begun to hang downward is unquestionably dangerous*, and should not be permitted under any circumstances if the fruit is afterwards to be used. The results of the chemical analysis reported in 1885 show that even heavy wind and violent rain are not sufficient to remove the poison from the fruit at this season, and remembering that the stem end of the apple presents a large conical pit by which the poison could be received and held, where neither rain nor wind could dislodge it, we have additional reason for this absolute prohibition of the use of any poison dangerous to health except when the fruit is young.

The experiments above described seem to me to prove that at least seventy per cent of the loss commonly suffered by the fruit grower from the ravages of the codling moth or apple worm may be prevented at a nominal expense, or, practically, in the long run, at no expense at all, by thoroughly applying Paris green in a spray with water, once or twice in early spring, as soon as the fruit is fairly set, and not so late as the time when the growing apple turns downward on the stem.

[From Report of the New York Agricultural Experiment Station, 1885.]

Spraying trees with Paris green and water has been often recommended as a preventive against injury from the codling moth (*Carpocapsa pomonella*, L.). In order to learn to what extent the harm wrought by this destructive insect may be thus avoided, we sprayed a few of the trees of the station orchard the past season, and on a portion of the trees made careful notes, intended to show as nearly as possible how much benefit resulted from the application. The trees selected for the experiment were eleven in number, of which nine were of the Fall Pippin variety, and the remaining two Rhode Island Greening. On June 3d we sprayed five of the Fall Pippin trees and one of the Rhode Island Greenings with Paris green and water at the rate of a teaspoonful to ten gallons. At this time the fruits were about the size of a cranberry. Alternate trees were left unsprayed for comparison.

The liquid was applied to the trees by means of a garden engine and the "cyclone nozzle." The nozzle attached to a hose was tied to the end of a light pole, about ten feet long, by means of which it could be raised and lowered at will, for spraying different parts of the tree.

We found this method of application quite laborious. The amount of water that the nozzle would allow to pass through it was so small that from a fourth to half an hour was necessary to thoroughly wet the foliage of a large tree. We tried attaching two nozzles to the end of the hose, which performed the work considerably faster than one.

On June 5th a very heavy rain fell, and fearing that this had largely washed off the poison, we made a second application of the Paris green and water at the same rate as before.

On June 17, we found on close examination that the larvae of the codling moth were still hatching and entering the fruits, which were at this time about the size of a small cherry. Wishing to make our application as thorough as possible, we sprayed the trees again on the following day, using one ounce of Paris green to ten gallons of water; applying the mixture this time with the so-called Field force pump fitted with the "Boss" nozzle. We found this apparatus very satisfactory. The liquid left the nozzle in a thin sheet, which expanded in width as it rose in the air, and soon became broken up into a fine spray. By the time it reached the height of the tree top it was so finely distributed that it was necessary to hold the nozzle in

one position for a considerable time before the water commenced dripping from the leaves. The nozzle could be held in the hand, dispensing with the pole, and by waving it to the right and left the foliage of the tallest apple trees in the orchard could be wet in one or at most two minutes, with very little waste of the liquid.

As the apples began to drop in August, the windfalls were collected and examined, under the sprayed trees, and those not sprayed, and the number of sound and wormy fruits counted. Oct. 5 and 6 the remaining fruit was picked, and assorted, and counted in the same way. The whole number of sound and wormy fruits yielded by each tree and the per cent (fractions omitted) of wormy fruits upon each was as follows:

SPRAYED TREES.

	Fruits not Wormy.	Wormy Fruits.	Per Cent of Wormy Fruits.
Tree No. 1, Fall Pippin.....	1755	225	11
“ 3, “	1429	129	8
“ 5, “	707	49	6
“ 7, “	129	27	17
“ 9, “	178	48	21
“ 11, R. I. Greening.....	186	39	17

Average per cent of wormy fruits from sprayed trees, $13\frac{1}{3}$.

TREES NOT SPRAYED.

	Fruits not Wormy.	Wormy Fruits.	Per Cent of Wormy Fruits.
Tree No. 2, Fall Pippin.....	331	292	47
“ 4, “	617	247	29
“ 6, “	393	309	40
“ 8, R. I. Greening	1591	518	25

Average per cent of wormy fruits from trees not sprayed, $35\frac{1}{4}$.

Tree No. 10 was sprayed on June 11th with a kerosene emulsion consisting of four pounds common yellow hard soap, one gallon kerosene oil, and one gallon soft water, the soap being dissolved in the water, the solution heated to boiling, the kerosene added, and the whole stirred until cold. One pint of the mixture was diluted with twenty gallons soft water, and applied to the trees in the same manner as the Paris green and water. The foliage seemed to be injured considerably by the application, a portion of the leaves turning brown in a few days, as if scorched.

This tree yielded 208 fruits that were not wormy, and 162 wormy ones, or 44 per cent of wormy fruits.

It appears that the percentage of wormy fruits from the trees sprayed with Paris green and water was about 22 per cent less than from those not sprayed. In other words, at this rate 100 barrels of apples picked from the sprayed trees would have yielded 22 barrels more fruit free from worms than the same number from the unsprayed trees. The kerosene emulsion in this case did not seem to prove beneficial.

THE APPLE SCAB.

[From Proceedings of the New Jersey State Horticultural Society, 1886.]

What is the experience of the Society in respect to what is generally known as apple seab?

The PRESIDENT would like to hear from Prof. Scribner.

Prof. SCRIBNER. The Department of Agriculture is engaged in preparing a special investigation of this disease of the apple, and I should be very glad to learn from practical fruit growers their experience in regard to it, and what varieties are most subject to it; under what conditions is it most prevalent; whether any one has noticed its absence under any peculiar circumstances, and what are the probable losses resulting from it.

The fungus in its active form, as it attacks the apple, is well-known. It attacks the apple, the leaves and young shoots, and has been repeatedly propagated from one orchard to another on the grafts. It is probably perennial in its habit, living from one year to another in its vegetative state; what other forms it may have besides those familiar to us all we don't know. It does not penetrate deeply in the tissues, but is a surface disease, and is readily susceptible to fungicides.

Experiments have been made at the New York Experiment Station the past year to combat this disease. A tree badly affected, in 1885, was selected to experiment with, one-half of the tree was sprayed with hypo-sulphide of soda ; two weeks later it received another application ; the result at harvest was that this portion of the tree yielded much better fruit than the other.

This is a disease which causes an immense loss, rendering the quantity of number two apples unnecessarily large. Mr. Charles S. Pope, the President of the Maine Pomological Society, wrote to the Department a few weeks ago relative to this disease, saying it had damaged him to the extent of \$1,000 the past season ; the Baldwin was especially affected.

I have noticed apples in our Washington market, particularly the Bellflower, badly affected with this disease.

The SECRETARY, in reply to the Professor's inquiry, would say, That with him the Carolina Red June, Fall Pippin, Red Astrachan, and Early Harvest, were among the varieties most affected, the loss to the first named being fully fifty per cent

W.M. R. WARD. The Greenings and Baldwins have been affected this year badly ; had never seen them troubled before. I attribute the early dropping of the apples to this cause. However, this may be due to the very dry season. I think a solution of London purple or Paris green sprayed on the trees would be beneficial.

Prof. SCRIBNER. The fungus of the apple-scab does not cause the apple to rot. These apples keep as well as others. Under the fungus growth is found a corrugated layer that protects the healthy tissues of the apple from decay. There are other fungi, more conducive to rot, that attack the apple ; I have noticed several this season. I have noticed that apples affected with the scab, if kept in a warm place, will commence to rot about this fungus sooner than elsewhere.

I have noticed, also, that on trees affected with this *fusicladium* the leaves fall prematurely, and when the apples are attacked when quite young the disease will doubtless hasten maturity and cause the premature falling of the fruit.

The SECRETARY had noticed that where the fruit was attacked it stopped the growth and expansion of the fruit at the point of attack.

Prof. SCRIBNER. This fungus distorts the apple very much ; sometimes to the extent to cause the apple to crack.

MR. BAIRD reported the apples of Monmouth County very badly affected the past season. Smith's Cider especially.

President PEARSON reported the loss of fruit and foliage.

[From article by Prof. J. T. Burrill of Illinois, in *Transactions of the Mississippi Valley Horticultural Society*, Vol. I, 1883.]

It is, however, no new thing. It has neither come into existence in our time nor has it recently been introduced in our part of the country. Its dispersion over the world seems to be as wide as that of the apple itself, and records now exist in the books of its occasional prolific development and injuries over nearly a century of time. Botanists have baptised it with several names, hard enough of course, and collectors of specimens count it in the make-up of herbaria, sometimes more than once, on account of the synonymous names under which it is known. Now, however, the authorities are quite generally agreed that henceforth *Fusicladium dendriticum*, Fhl., shall be its true and only title in scientific parlance.

Turning now to the supposed conditions which have of late influenced the increased injuries of the fungus, nothing can be asserted with positiveness, but all indications seem to point to atmospheric and climatic causes rather than any special physiological changes in the trees themselves. Some kinds of trees are much worse affected than others, and this may be generally true of special varieties, or only during certain seasons, or at certain ages of the stock. But nearly all varieties of apples and pears have unusually suffered, at least in places, during the last year. Even nursery stock has been singed and stunted.

It seems to me, we are first to look to the open and humid autumn of 1881 as an important contribution to the severe result. During this time the fungus certainly did vigorously develop on the fading leaves, and especially on the unripened shoots of the year's growth. As the spores very readily germinate when moistened, it is not probable that any of them survive the winter on the fallen leaves. When once germinated, winter's vicissitudes soon put an end to them as they do to sprouting seeds. But on the twigs, in the dry air, both spores and mycelium successfully pass the winter and freely grow in the spring.

Having thus an unusual start last spring (1882) and unusually favored by the remarkable lateness and wetness of the season, the fungus became immensely developed, and, as we know, did immense

damage. The outlook for next year (1883), as at present indicated, is not encouraging, but no one can certainly predict the results. Certain it is that the trees are now badly infested, and with similar conditions a similar development may be expected.

The important question is, "Can anything be done to reduce the damage?" I cannot, with assurance, say "yes." But some experiments on a small scale seem to be sufficiently encouraging to plan for further and more extended trials. The thing to do, of course, is to kill the fungus and prevent its reappearance. From what has been said the most favorable time for treatment is in the winter, when the leaves are off, and the applications should be made to the young wood.

The suggested trials are, first, pruning away any unnecessary young growth and especially that most affected, then syringing the tree with an emulsion of kerosene oil made with soap and water. To prepare this, mix equal quantities of soft soap, or hard soap softened with water and heat, and common coal oil; stir vigorously and for at least five minutes, then add ten to twenty times the quantity of water, and again stir. The result should be a uniform milky fluid. Apply in any way so as to wet the bark of the last year's growth, or, for thoroughness, that of two years' production. No fears need be entertained of injury to the tenderest part of the tree if the emulsion is well made. It can be applied, if desirable, to the leaves, but there is much less surface to wet before these appear, and it is much easier to reach it.

Coal oil of itself is injurious to vegetation, but when made into an emulsion, and thus diluted, no fears need be entertained about its use. Still, it may be in this State quite destructive to such fungus growths as that of which we write.

Sulphur has been recommended for similar use, but in this case little good can be anticipated from it, at any rate, if applied in winter. The sulphur itself does not kill fungi, because it is insoluble, but the beneficial effect comes from the gases, products of which it forms a part. In the winter these are not formed, while the rains wash away the solid material. Kerosene, on the other hand, is as effectual in cold as in warm weather, and kills by direct action.

There is another thing that may be mentioned in favor of the oil emulsion: It is also destructive to insects, and, wherever they may be reached, to their eggs. It is probable that the eggs of the apple aphid, which are deposited in autumn on the twigs, may be destroyed in this way. If so, we can kill two birds with one stone.

[By Prof. William Trelease, in the Report of the Agricultural Experiment Station of the University of Wisconsin, 1883.]

The seab fungus does not seem to penetrate below the epidermal layer of cells. These are split open and destroyed. The cells immediately below them are usually somewhat shrunken and flattened, while their contents are dead or injured, as is shown by their brown color. Sometimes, but not always, a small mass of tissue lying under the seab is quite green and intensely bitter, but the injury seldom extends far beneath the surface of the fruit, unless this is deeply cracked, and the seeds of scabby apples are apparently as vigorous as those of sound specimens. Usually, as the spot grows older and enlarges, an effort is made to throw off the parasite and heal the wound by the formation of a layer of cork just below it, and it is this brown cork which is seen through the cracks in old scabs.

From what has been said, it appears that the leaf or twig mildew and the seab of the fruit are diseases caused by the same parasitic fungus, which at first lives beneath the cuticle, in the one case, and in the epidermal cells, in the other. I have not yet been able to learn how the parasite penetrates the epidermis. It is well known that the skin of many varieties of the apple is marked by simple or areole dots which occur naturally on the healthy fruit, and are similar in their nature to the corky dots called lenticels that are found on the branches of the apple tree. These dots are slightly elevated portions of the skin where the epidermis is commonly split, and I suspect that the spores often find a lodgement in these dots, and through them reach the surrounding cells, when they germinate.

The age at which the fruit ceases to be infected is also uncertain. Last spring Mr. Tuttle found the young apples scabbed when no larger than peas, and it appears probable that the disease may attack them at any time from the unfolding of the blossom to their maturity; but the seab does not seem to spread from one apple to another in the barrel, though, as has been said, the individual spots continue to grow on the ripe fruit.

Those conditions of the soil and atmosphere which favor the development of leaf mildew are, in the main, most favorable for the formation of seab on the fruit, although hotter weather may be necessary for the excessive development of the former. This fact, taken in connection with the greater prevalence of active spores

when there is much of the leaf disease, explains the belief of many orchardists that scab is caused by the mildew.

Mr. A. L. Hatch, of Ithaca, writes: "Apple scab worst on a poor soil, or rather subsoil. Where an orchard has been planted on heavy timber lands, where the original forest was mainly basswood, white oak, and some ash and maple, the apples are much fairer than on our white oak brush land, or on black oak land. An apple tree is more influenced by subsoil than surface soil, when of bearing age. In 1882, Joseph Elliot, of Port Andrew, in this county, had 1,600 bushels Fameuse, fair and smooth, while almost every apple we had in 150 to 200 bushels here, was scabbed. On some soils Walbridge is smooth and good. Mildew, we think, is worst where scabbing is worst, *i. e.*, as far as soil influence goes; but is also very bad on richer, warmer soils, especially if sandy.

"Our notion is, that soils and subsoils that furnish most of the protecting covering to leaves and fruit (whether it is silex or wax), will grow trees less affected with scab and mildew; and this is heavy timber soil, with a subsoil not as porous as we have here on white oak brush land—such as we find where basswoods, white oaks, ash, etc., attain large size, but not where black oak and second growth brush, poplars, etc., prevail. Also, that a very damp atmosphere, with cold when apples are from one-tenth to one-quarter grown, produces scab, and with heat produces mildew, provided it occurs before the first of July, before the first growth of apple trees is completed, and while leaves are tender. This first growth is always complete in orchard trees by the middle of July at latest."

Prof. W. J. Beal states that scab is worst in seasons which are wet at first, with alternating extremes of wet and dry weather later, and Mr. Harris finds more of it in "muggy" weather following a cool, dry period. According to Mr. Garfield, the side of the apple most exposed to light is most seriously affected as a rule, so that from the center of the tree "the fruit looked fair and beautiful, when really there was not a perfect apple on the tree because of scab on the outer side of the fruit."

Like the mildew, scab is more troublesome on some varieties than on others. As a boy I noticed the knobby, cracked fruit of the Early Harvest in New York State, where, in damp summers, this variety was always ruined. Professor Beal mentions Fameuse and Northern Spy as scabbing badly, especially on the lower limbs where they are thick, while the Baldwin and Rhode Island Greening scab little, often

not at all ; and Secretary Garfield reports Early Harvest, Fameuse, Rhode Island and Northern Spy as suffering in other parts of Michigan.

In Wisconsin, the Fameuse is pre-eminent as scabbing badly, while the Walbridge, Late Strawberry, Haas, Northern Spy, fall and winter Winesop, Roman Stem, Sweet Pear, Rawles Janet, Fall Stripe, McMahon's White, Ben Davis and Talman Sweet scab more or less badly in wet seasons or on heavy, poorly-drained soil.

Several correspondents believe that no variety is absolutely exempt from the disease under all circumstances ; but they agree that Duchess, Alexander, Golden Russet (and, in fact, all russets), Wealthy, Pewaukee, Tetofsky, Red Astrachan, Sops of Wine, Plumb's Cider, Utter, Bethlehemite, Fall Orange, St. Lawrence, Cole's Quince and Lowell, scab much less than most varieties of the first list. Of about one hundred Russians in Mr. Tuttle's nursery, only a few scab to an injurious extent.

Some idea of the injury caused by the scab may be gathered from Mr. Hatch's statement that in his locality (Richland County) 99 per cent of Fameuse and Walbridge, 40 per cent of Haas, 20 per cent of Plumb's Cider, 10 per cent of Pewaukee, 5-10 per cent of Tetofsky, and something less than 5 per cent of Duchess, scab injuriously in bad years. The total failure of the apple harvest in 1883 over a large part of the State is attributed to the leaf mildew and scab by several correspondents.

These two diseases of the apple are not new diseases, nor are they confined to Wisconsin. The theory has prevailed with a few orchardists that both result from the age and lessened vigor of their trees, or from a sort of natural deterioration of certain varieties through long cultivation ; but neither of these theories is accepted by the best observers. The same diseases occur on the pear. On either plant they are, so to speak, epidemic in seasons which are favorable for their development and propagation. Like a widespread outbreak of small-pox in a large city where isolated cases have occurred all the time, they appear new to many people, and, like the small-pox epidemic, may require active, concerted and intelligent measures to prevent extensive damage as a result of their thorough establishment in the past two years.

Both diseases occur the world over. The fungus on the leaf was studied and described in 1833, by Wallroth, as *Cladosporium dendriticum*. From the variability of its spores and its wide distribution,

it has received a number of synonyms, of which *Spilocaea pomi*, applied in 1829 to the reproductive cells which separate directly from the mycelium, is the only one which need be mentioned. In 1875, Sorauer published an account of the seab, which is known in Germany as the apple rust or scurf, showing that it is caused by the same fungus that attacks the leaves, as Cooke had suggested in 1873. From the occasional presence of two-celled spores, and the slight turnip shape of these bodies, Von Thuemen has proposed the genus *Napicladium* for the reception of our plant, which he calls *N. Soraueri*; but the general tendency of botanists is to retain it in the genus *Fusicladium*, to which it was transferred by Fuckel.

The reader who has followed this account so far naturally desires to learn of a remedy or preventive for the disease. Several measures can be suggested as promising relief. One of these is a better system of a drainage* and more open planting than we find in the average orchard, both tending to promote the general health of the tree. Where leaves fall from mildew, they should be raked together on a damp, still day and burned.

In the paper referred to, Professor Burrill suggests "pruning away any unnecessary growth, and especially that most affected, then syringing the tree with an emulsion of kerosene oil made with soap and water. To prepare this, mix equal quantities of soft soap, or hard soap softened with water and heat, and common coal oil; stir vigorously and for at least five minutes, then add ten to twenty times the amount of water and again stir. The result should be a uniform milky fluid. Apply in any way so as to wet the bark of last year's growth, or for thoroughness, that of two years' production. No fears need be entertained of injury to the tenderest part of the tree if the emulsion is well made." It is recommended that this be done before the leaves appear, to destroy the mycelium and spores on the twigs, but this treatment should also be tested after the leaves were out and the fruit has set, if the fungus is on the increase. The oil emulsion, if properly made with either soap or milk, is a good and safe application for the apple aphis, oyster shell bark louse and other insect enemies of the tree; used in connection with a proper system of planting and drainage and the occasional removal of the

*I am aware that our agricultural journals for the last year contain numerous articles written to show that the apple lives in soggy soil or can even be flooded for a long time without dying, just as the bark may sometimes be stripped off without killing it; but the testimony its practice of most successful and well informed horticulturists is against the ultimate success of trees subjected to such barbarous treatment.

old bark and of fallen leaves and rubbish, it promises to well repay the man who uses it. Alkali, which is largely used for the destruction of orange scale insects, in California, might likewise be tried against this fungus, and experiments with sulphur and lime, when it is likely to do harm in summer, may yield good results. From the observations of Secretary Garfield it would also appear desirable to test the efficacy of protecting the fruit from too strong sunlight. The results of careful experiments in any or all of these directions will be gratefully received at the Station.

The prevention or eradication of this and other fungoid diseases should be understood to demand a rigid application of the principles which govern the rational treatment of the contagious diseases of man and the domesticated animals. Until a proper system of orchard supervision is adopted, at any rate, we must expect that whenever a favorable season occurs both leaf blight and scab will appear on susceptible varieties and in badly located orchards. In setting an orchard, therefore, care should be taken to choose the greater part of the stock from those hardy, "thick-leaved" varieties which prove most resistant to this disease, as well as to our trying winter and summer climate.

[From Report of the New York Agricultural Experiment Station, 1885.]

We made a series of applications intended to prevent the growth of the fungus which produces the apple scab, *Fusicladium dendriticum* Felk. The tree chosen for the experiment was one of the common Siberian (?) crab that had been very subject to injury from this fungus in previous years.

On May 5th, we syringed one-half of the tree with a solution of hyposulphite of soda, at the rate of one pound to ten gallons of water, and repeated the application on May 9th and May 15th.

During the summer, the foliage appeared less injured by the fungus upon the syringed half of the tree. On September 19, we picked a quantity of the fruits from the syringed part of the tree, and from the part not syringed, and assorted each lot into three qualities. In the first quality we put only the fruits not attacked by the fungus, in the second, those attacked in but one place, and there but slightly, and in the third, those much injured. The results appear in the following table, in which the percentage of the fruits of each quality are given for the syringed and unsyringed part of the tree. We also give the weight of 100 fruits in each quality, as an indication of the amount of injury wrought by the fungus:

	Syringed Portion.		Unsyringed Portion.	
	Per Cent.	Wt. of 100 fruits: oz.	Per Cent.	Wt. of 100 fruits: oz.
First Quality	21.5	19	10.	15
Second "	38.5	16	29.7	13
Third "	40.	13	60.3	8

It appears that in the syringed portion of the tree the per cent of uninjured fruits was double that in the unsyringed portion, while the percentage of the third quality, or much injured fruits was one-half less. It also appears that all the fruits on the syringed portion were larger in size than those on the unsyringed portion. We also noted that there were many more decayed fruits on the unsyringed portion of the tree.

The indications are, therefore, the hyposulphite of soda proved beneficial. The solution may be applied at the same time as the Paris green and water, where the latter is used for the codling moth, thus avoiding the expense of a special application.

KEROSENE EMULSION AS AN INSECTICIDE.

[From Report of Prof. C. V. Riley, U. S. Entomologist, 1884.]

It cannot be too strongly impressed upon all who use kerosene as an insecticide, that it can be considered a safe remedy only when properly emulsified. The formula for the kerosene and soap emulsion, as found most satisfactory by Mr. Hubbard, is as follows:

Kerosene..... 2 gallons = 67 per cent.
Common soap or whale-oil soap $\frac{1}{2}$ pound } = 33 per cent.
Water 1 gallon }

Heat the solution of soap and add it boiling hot to the kerosene. Churn the mixture by means of a force pump and spray-nozzle for five or ten minutes. The emulsion, if perfect, forms a cream, which thickens on cooling, and should adhere without oiliness to the surface of glass. Dilute, before using, one part of the emulsion with nine parts of cold water. The above formula gives three gallons of emulsion, and makes, when diluted, thirty gallons of wash.

The kerosene and soap mixture, especially when the latter is warmed, forms, upon very moderate agitation, an apparent union ; but the mixture is not stable, and separates on standing or when cooled or diluted by the addition of water. A proper emulsion of kerosene is obtained only upon violent agitation. It is formed, not gradually, but suddenly : in short, to use a familiar phrase, "it comes" like butter. The time required in churning depends somewhat upon the violence of the agitation, but still more upon the temperature, which, however, need not be much above blood heat.

When obtained, an emulsion of kerosene and soap is known by the perfect union of the ingredients, and the absence of oiliness, so that the liquid clings to the surface of glass or metal. It resembles a rich cream, more or less thickened according to the proportion of soap in the mixture.

PREVENTIVES AND REMEDIES FOR PEAR BLIGHT.

By Prof. J. C. ARTHUR.

[From Report of the Mycological Section of U. S. Department of Agriculture, 1886.]

Whatever form Pear Blight assumes, it is started by germs gaining access to the tree in one of the three ways described—through the flowers, the growing shoots, or injuries of the bark. No method is known or has yet suggested itself of rendering the tree insusceptible to the disease, and a direct prevention must be sought in some means of excluding the germs. There are three ways by which germicides may be applied to trees—by fumigation, by spraying and by wasling. The first method offers a possibility of at least partial success, and is done by sulphur mixed with lime and applied as a wash to the trees. The odor remains upon the trees for weeks and is said to ward off the disease.

Spraying offers little more hope of success than fumigation. An experiment tried during last season in spraying with a solution of hyposulphite of soda, applied several times during the period of expansion of the buds, gave no evidence of beneficial effects.

The application of washes cannot, of course, be made to the flowers or growing shoots, but excellent results may reasonably be expected when made to the trunks and larger branches. To decrease the amount of cracking the body of the tree may be shielded from the sun's fiercest rays by a low trimmed head, or by leaning the whole tree toward the southwest, or by boards, matting, or other protection, on the sunny side of the trunks.

Among the indirect methods of fighting the disease none are more important than those which secure slow growth and early maturity of the shoots. This has been recognized from the first agitation of the subject, but until the present time there has been no unanimity of opinion as to the exact objects to be accomplished.

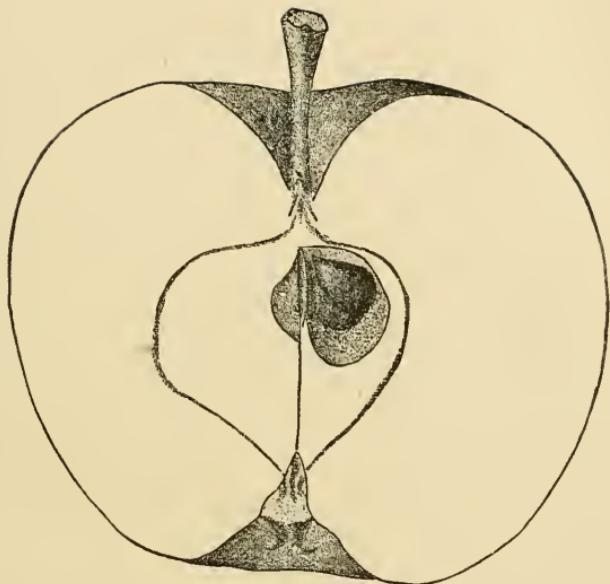
Of genuine remedies there are none; but as the disease is local, and spreads through the tissues slowly, it is possible, as has long been known, to effectively check its progress by amputation. The smaller limbs are to be cut off a foot or two below the lowest manifestation of the disease, and the spots on the trunk and larger limbs are to be shaved out, cutting deep enough to remove all discoloration. A careful operator will keep the knife disinfected with carbolic acid or otherwise; if this is not done the disease will be conveyed in a small percentage of instances to the freshly cut surface, necessitating a subsequent excision. The beneficial effects of this treatment are least apparent during periods of epidemic, when the tree is attacked at almost every vulnerable point. At such times a more radical method has been found serviceable, which is to cut off the whole top to within a foot or two of the ground. It can be practiced to advantage upon trees that are as much as ten years old, or even older.

THE BOARDMAN APPLE.

[From Report of U. S. Department of Agriculture, Division of Pomology, 1886.]

A box of very handsome apples of medium size and quality was received from Mr. E. H. Purington, of West Farmington, Me., said by him to be from a seedling of the Dean, and which I named "Boardman," in honor of Samuel L. Boardman, the Secretary of the Maine State Pomological Society. Below is a description of one of the specimens:

Size, small to medium, $2\frac{1}{2}$ inches; shape, flat, conical, but not pointed, regular; surface, smooth, glossy, bright mixed and splashed carmine almost entirely covering a white ground; dots, not very numerous, gray, prominent; basin, medium, abrupt, regular, slightly marked with russet or leather-cracked; eye, small, partially open; cavity, deep, narrow, furrowed, but little russetted; stem, long, slender; core, small, closed; seeds, broad, plump, sharply pointed, dark; flesh, very white, tender, fine grained, juicy; flavor, subacid, not rich; quality, good; season, December to spring in Maine.



THE BOARDMAN APPLE.

From Plate 10, Report of Department of Agriculture, Division of Pomology, for 1886.

APPENDIX.

Pomological and Horticultural Societies.

Below is given a list of those Pomological and Horticultural societies and their Secretaries, in the different States, with which our Society is in correspondence, and with which it exchanges Reports and Transactions. We should be very glad to extend the list so as to embrace all societies of this nature in every State in the Union.

American Pomological Society. Charles W. Garfield, Secretary, Grand Rapids, Michigan.

Department of Agriculture of the United States. Hon. Norman J. Colman, Commissioner, Washington, D. C. Hon. Henry E. Van Deman, Chief of Division of Pomology.

American Horticultural Society. W. H. Ragan, Secretary, Greencastle, Indiana.

Society of American Florists. Edwin Lonsdale, Secretary, Philadelphia, Penn'a.

Massachusetts Horticultural Society. Robert Manning, Secretary, Boston, Mass.

Western New York Horticultural Society. P. C. Reynolds, Secretary, Rochester, N. Y.

New Jersey State Horticultural Society. E. Williams, Secretary, Montclair, N. J.

Pennsylvania Fruit Growers' Society. E. B. Engle, Secretary, Waynesboro', Penn'a.

Ohio State Horticultural Society. George W. Campbell, Secretary, Delaware, Ohio.

Wisconsin State Horticultural Society. H. C. Adams, Secretary, Madison, Wisconsin.

Indiana Horticultural Society. C. M. Hobbs, Secretary, Bridgeport, Indiana.

State Horticultural Society of Michigan. Charles W. Garfield, Secretary, Grand Rapids, Michigan.

Illinois State Horticultural Society. A. C. Hammond, Secretary, Warsaw, Illinois.

Iowa State Horticultural Society. G. B. Brackett, Secretary, Denmark, Iowa.

Missouri State Horticultural Society. L. A. Goodman, Secretary, Westport, Missouri.

Kansas State Horticultural Society. G. C. Brackett, Secretary, Lawrence, Kansas.

Nebraska State Horticultural Society. Samuel Barnard, Secretary, Table Rock, Nebraska.

State Board of Horticulture of California. A. H. Webb, Secretary, San Francisco, California.

Minnesota State Horticultural Society. S. D. Hillman, Secretary, Minneapolis, Minn.

Columbus Horticultural Society. W. S. Devol, Secretary, Columbus, Ohio.

Colorado State Horticultural Society. Nelson Millett, Secretary, Denver, Col.

Massachusetts Agricultural College. Hon. Henry H. Goodell, President and Librarian, Amherst, Mass.

New York State Agricultural Experiment Station. E. Lewis Sturtevant, Director, Geneva, N. Y.

Entomological Department of the State of Illinois. Prof. S. A. Forbes, Entomologist, Springfield, Ill.

Ohio Agricultural Experiment Station. N. S. Townshend, Director, Columbus, Ohio.

Department of Fruit Pests, California State Board of Horticulture. W. G. Klee, Inspector of Fruit Pests, Sacramento, Cal.

North Carolina State Horticultural Society. S. Otho Wilson, Secretary, Vineyard, N. C.

California State Board of Viticultural Commissioners. Chas. A. Wetmore, Chief Viticultural Officer, Sacramento, Cal.

Fruit Growers' Association of the Province of Ontario. L. Woolverton, Secretary, Grimsby, Ontario.

Montreal Horticultural Society. E. J. Maxwell, Secretary, Montreal, P. Q., Canada.

Entomological Society of the Province of Ontario. Edmund Baynes Reed, Secretary, London, Ontario.

Fruit Growers' Association of Nova Scotia. C. R. H. Starr, Secretary, Port Williams, N. S.

Ontario Department of Agriculture, Entomological Division. James Fletcher, F. R. S. C., Entomologist, Ottawa, Canada.

MEMBERS OF THE SOCIETY.

NOTE—Any errors or changes of residence should be promptly reported to the Secretary. Members will also confer a favor by furnishing the Secretary with their full Christian names where initials only are given.

LIFE MEMBERS.

Andrews, A. Emery	Gardiner	*Harris, N. C	Auburn
*Atherton, H. N	Hallowell	Harris, N. W	"
Atherton, W. P	"	Harris, William M	"
Atkins, Charles G	Bucksport	*Hersey, T. C	Portland
Atwood, Fred	Winterport	Hopkins, Miss S. M	Gardiner
Bennoch, John E	Orono	Hoxie, James S	North Fairfield
Boardman, Samuel L	Augusta	Hobbs, M. C	West Farmington
Briggs, D. J	South Turner	Ingalls, Henry	Wiscasset
Briggs, John	Turner	*Jewett, George	Portland
Burr, John	Freeport	Johnson, Isaaq A	Auburn
Carter, Otis L	Etna	Jordan, Francis C	Brunswick
Chase, Henry M	North Yarmouth	Knowlton, D. H	Farmington
Chase, Martin V. B	Augusta	Low, Elijah	Bangor
*Clark, Eliphalet	Portland	Low, S. S	"
Cole, Horatio G	Boston, Mass	Lapham, E. A	Pittston
Crafts, Moses	Auburn	McLaughlin, Henry	Bangor
*Crosby, William C	Bangor	*Metcalf, M. J	Monmouth
Dana, Woodbury S	Portland	Moore, William G	"
DeRocher, Peter	Bradentown, Fla.	Moor, F. A	Waterville
Dirwanger, Joseph A	Portland	Morton, J. A	Bethel
Dunham, W. W	North Paris	Morton, William E	Portland
Dyer, Milton	Cape Elizabeth	*Noyes, Albert	Bangor
*Emerson, Albert	Bangor	Perley, Chas. I. Seward's (Vassalboro')	
Farnsworth, B. B	Portland	Pope, Charles S	Manchester
Frost, Oscar F	Monmouth	Pulsifer, D. W	Poland
*Gardiner, Robert H	Gardiner	Purington, E. F	West Farmington
Gardiner, Robert H	Boston, Mass	*Richards, F. G	Gardiner
George, C. H	Hebron	Richards, John T	"
Gilbert, Z. A	North Greene	Ricker, A. S	Turner
*Godfrey, John E	Bangor	*Richardson, J. M	Gardiner
Hanscom, John	Saco	Roak, George M	Auburn
Harlow, S. C	Bangor	Robinson, Henry A	Foxcroft

* Deceased.

LIFE MEMBERS—CONCLUDED.

Rolfe, Samuel	Portland	Sweetser, S. R.	Cumberland Center
Sawyer, Andrew S.	Cape Elizabeth	*Taylor, Joseph	Belgrade
Sawyer, George B.	Wiscasset	Taylor, Miss L. L.	(Lakeside) Belgrade
Shaw, Stillman W.	West Auburn	Thomas, William W., Jr.	Portland
Simmons, H. J. A.	Waldoboro'	Tilton, William S.	Boston, Mass
*Smith, Alfred	Monmouth	True, Davis P.	Leeds Center
Smith, Henry S.	"	Varney, James A.	The Dalles, Oregon
Starrett, L. F.	Warren	Vickery, James	Portland
*Stetson, Isaiah	Bangor	Vickery, John	Auburn
Stilphen, Asbury C.	Gardiner	Wade, Patrick	Portland
Stanley, Charles	Winthrop	*Weston, James C.	Bangor
Stanley, O. E.	"	Wharff, Charles S.	Gardiner
Strout, S. F.	West Falmouth	Whitney, Edward K.	Harrison
Strattard, Mrs. A. B.	Monroe	Woodman, George W.	Portland

*Deceased.

ANNUAL MEMBERS, 1886.

Allen, Nelson S.	Dennysville	Hoyt, Mrs. F.	Winthrop
Bartlett, M. E.	East Dixmont	Hawkins, M. P.	Auburn
Blossom, Leander H.	Turner Centre	Hibbard, C. H.	Lewiston
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